

# THE TECHNOLOGY REVIEW



RELATING TO THE MASSACHUSETTS  
INSTITUTE OF TECHNOLOGY  
MAY • • • • 1929

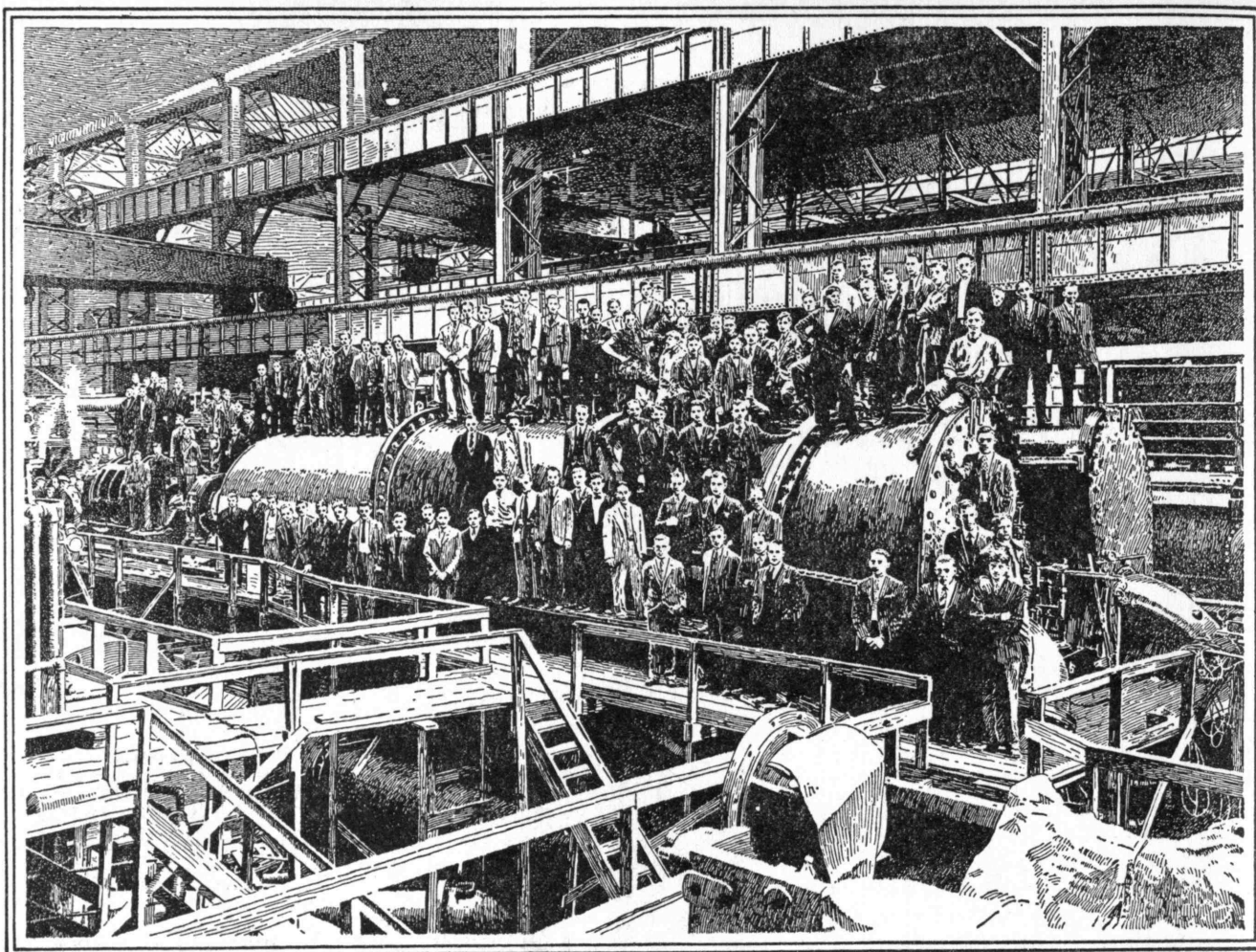


# technology review

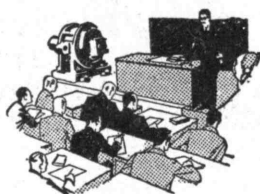
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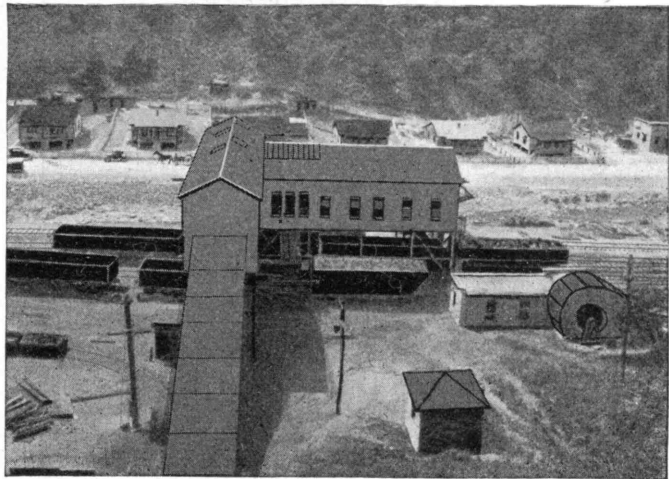
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# The TECHNOLOGY REVIEW

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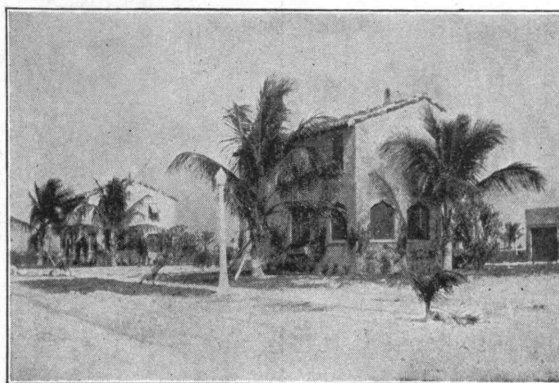
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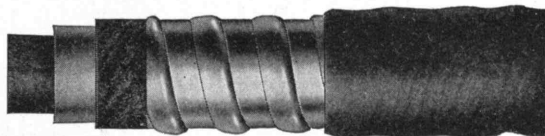
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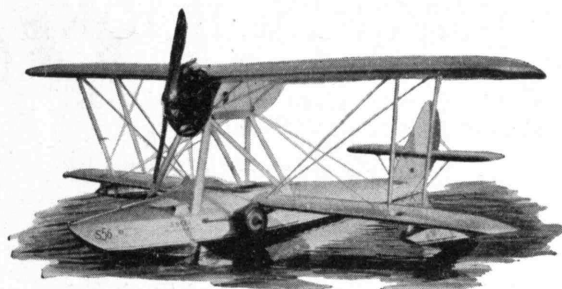
## THE TABULAR VIEW

**M**ATHEMATICS, murder, and the technique of the scientific detective story were treated divertingly by Dr. Norbert Wiener in The Review for March. In a more professional mood he returns this month to present an illuminating commentary on the seductively abstruse Einstein theory that has been so widely noted in the public prints. Dr. Wiener not only disposes of some current misconceptions about the work of the great German, but he places it in proper perspective with other current work in mathematical physics. ¶ The Editors, despite the disapproving gestures that are sure to come from Drs. WIENER and MANUAL S. VALLARTA, '21, wish to point out that this article on Einsteiniana is the result of a coup achieved by these two workers, which consisted of discovering and publishing (simultaneously with the German Wigner) certain deficiencies in the January Einstein paper — deficiencies recognized by Einstein and discussed by him in a recent letter to them. Because of this background the article assumes added importance, and incidentally suggests that mathematicians, in real life as well as in Van Dine novels, at times find excitement and romance in their work.

**T**HE remainder of The Review's articles this month and all of its Trend of Affairs section are devoted to aviation and its related activities. All of this material has been contributed, and The Editors are deeply grateful, by recognized authorities or careful students in their respective fields. Taken in the whole, these contributions constitute for the laity a valuable and dependable survey of the true state of American aviation. It should be added that the collection and presentation of this material could not have been made without the advice and assistance of members of the Institute's Department of Aeronautical Engineering, particularly Professor CHARLES H. CHATFIELD, '14, and DANIEL C. SAYRE, '28. ¶ It is mete and natural that the majority of our contributors on aeronautics are Technology men, for it was at the Institute that the first regular course in aeronautical engineering was established, and it is at the Institute now that America's largest and most important school of aeronautical engineering is to be found. It is also mete that the author of the leading article in this issue, JEROME C. HUNSAKER, S.M. '12, was in charge of the Institute's first course in aeronautics and received the first Doctor's degree awarded in that field. His article on airships derives directly from his present work as Vice-President of the Goodyear-Zeppelin Corporation (PAUL W. LITCHFIELD, '96, forthcoming President of the Alumni Association, is President). Between the time he left the Institute in 1916 until he assumed his present position, several years ago, he was, as an officer in the Construction Corps of the Navy, detailed to the Aircraft Division, the Bureau of Construction and Repair, and the design section of the Bureau of Aeronautics. Shortly before going with the Goodyear-Zeppelin Corporation he was with the Bell Telephone Laboratories. He is a member of the National

*(Concluded on page 390)*

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## THE TABULAR VIEW

(Continued from page 389)

Advisory Committee for Aeronautics, and wears the Navy Cross. ¶ Mr. Sayre, who prepared the article on air transportation, became an Instructor in the Department of Aeronautical Engineering in 1927, prior to obtaining his S.B. degree, long delayed. For many years he had been interested in air transportation. He was one of the founders and promoters of the Boston Airport Corporation and he still follows this work academically if not professionally. ¶ MANFRED RAUSCHER came to the Institute from Switzerland. He received his degree of S.B. in Mathematics in 1926, and his S.M. in Aeronautical Engineering the following year. Since 1927 he has acted as assistant in the Department of Aeronautical Engineering.

THE Trend of Affairs section includes contributions from Captain EMORY SCOTT LAND, '07, (C.C.) U.S.N., Vice-President of the Daniel Guggenheim Fund for the Promotion of Aeronautics; ELISHA LEE, '92, Vice-President of the Pennsylvania Railroad; GERARD H. MATTHES, '95, Consulting Engineer; and GEORGE J. MEAD, '16, Vice-President of the Pratt and Whitney Aircraft Company.

HERVEY W. SHIMER prepared the review of "Anthropology and Modern Life," by Franz Boas. He is Professor of Paleontology in the Institute's Department of Geology. After three years at Gettysburg College he went to Lafayette College where he received the degrees of A.B. and A.M. In 1904 he received a Ph.D. from Columbia, and in 1916 an honorary Sc.D. from Gettysburg. He came to the Institute in 1903.

SPACE limitation forced the Editors to omit several additional items on aeronautics scheduled for this issue. Among these is a pertinent article on airplane engine design by Major CHARLES H. BIDDLECOMBE, formerly of the Royal Flying Force and now with the Wright Aeronautical Corporation. It is hoped that this may be presented in a subsequent issue. Two other contributions, one on airplane instruments by J. LEOPOLD, President of the Consolidated Instrument Company, and another on gliders by HARRY KARCHER, '25, Aeronautical Engineer with the Ford Motor Company, were also omitted with reluctance. ¶ The Editors are indebted to Major IRA LONGANECKER, of the Army Air Corps, for his cooperation in supplying photographs for this issue.

THE etching on the cover is the second to be presented this year from the work of SAMUEL CHAMBERLAIN, '18. "Amalfi" succeeds "Plaza San Martin — Segovia," published in November, 1928. Covers of The Review for the years of 1925-26 and 1926-27, and "A Side Street in Beauvais," published in February, 1928, are examples of his work, well-known to its readers. The Editors are indebted to Professor WILLIAM EMERSON for the loan of "Amalfi."

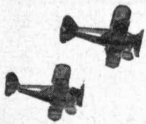
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# The TECHNOLOGY REVIEW

VOLUME 31

MAY, 1929

NUMBER 7

## AIRSHIPS REDIVIVOUS

*American and German initiative is rapidly bringing the dirigible into its own*

BY JEROME C. HUNSAKER

**H**ISTORICALLY airships derive from balloons, and for nearly a century and a half the developments of applied science have been incorporated into the design of lighter-than-air flying machines. The Mongolfiers' first hot air balloon of 1783 was a true invention: varnished paper or cloth for the balloon proper, hot air to inflate it, and a basket to carry the load had been available for an indefinite period. The principle of Archimedes was fully understood and nothing was lacking but the application of this principle to the materials at hand. Within the year, the newly discovered hydrogen gas was substituted for hot air by Professor Charles, and the balloon was further perfected by the development of an adequate theory of its lift or buoyancy. Improvements were rapid and the free balloon as we know it today is essentially the balloon of the early Nineteenth Century. (See The Review for April, 1928, page 341.)

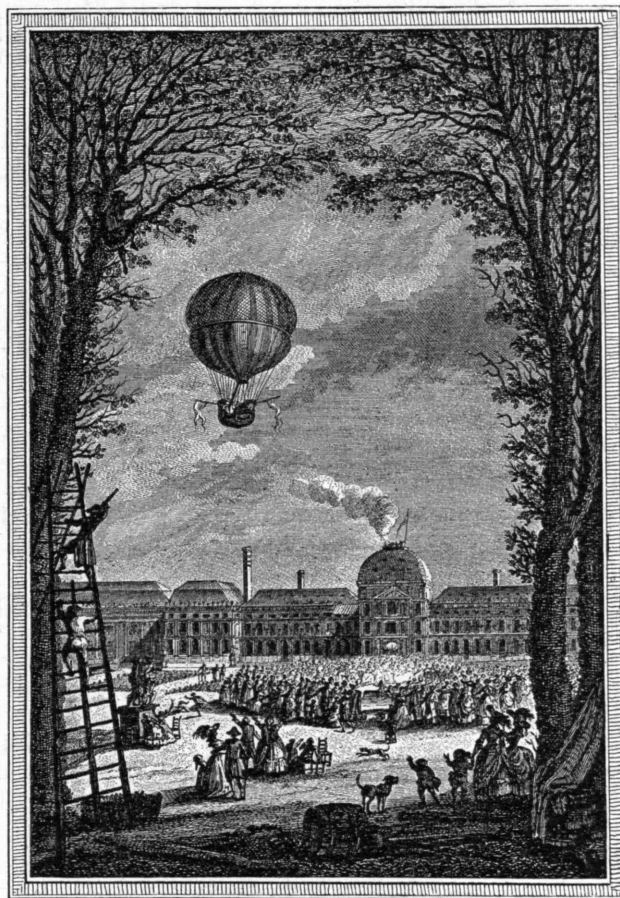
Efforts to make the balloon useful were directed toward making it dirigible, but man power and sails proved useless and no real progress was made until the gasoline engine became available late in the century. Then we had the non-rigid airship, in which the balloon or lifting element became a fish-shaped envelope to facilitate motion through

the air, and the balloon basket became a car- or boat-shaped structure carrying the engine and personnel. The non-rigid airship was perfected as quickly as light engines, but again progress stopped. Only small sizes were suitable, for an elongated envelope full of gas could not be driven at high speed unless kept tight by high pressure.

To obtain airships of larger size and higher speed that

were not so dependent on gas pressure, the semi-rigid type was evolved in which a rigid keel stiffened the long gas envelope. Existing materials again limited progress. The non-rigid and semi-rigid types of airship are not essentially basic inventions. Rather they are obvious engineering attempts to apply an engine to the original free balloon.

The Zeppelin or rigid airship was, however, a basic invention in the broadest sense. Count Zeppelin wished to build a true ship of the air. For this he proposed a cage-like rigid hull of suitable shape over which was to be stretched a fabric skin or outer cover. This structure corresponds to the framing of a vessel and its outer plating. To give buoyancy its compartments were filled with bags of hydrogen gas. Thus he had more than a dozen gas cells inside his ship but these gas cells functioned less like balloons than like the water-tight compartments of a vessel. The size



AN OLD ENGRAVING DEPICTING A BALLOON FLIGHT MADE IN 1783 IN THE GARDEN OF THE TUILERIES BY M. M. CHARLES AND ROBERT





THE "PURITAN", A SMALL NON-RIGID AIRSHIP RECENTLY BUILT BY THE GOODYEAR-ZEPPELIN CORPORATION, DESCRIBED BELOW

and speed of the airship no longer depended upon gas pressure and the possibility of building great airships waited only the evolution of structural methods and material which would combine the necessary strength with light weight.

This evolution of a practical structure commenced in 1900 when aluminum became available and continued through a long series of experimental airships of increasingly greater size and better performance. Finally, the structural design was perfected when duralumin, a strong

aluminum alloy, was invented. To a degree little realized, the Zeppelin airship must be classed as a contribution of the metallurgist. Modern Zeppelins have a framed structure of duralumin girders with high tensile steel wires. In England a very interesting rigid airship is being built in which a strong chromium alloy steel is used for the girders in place of duralumin.

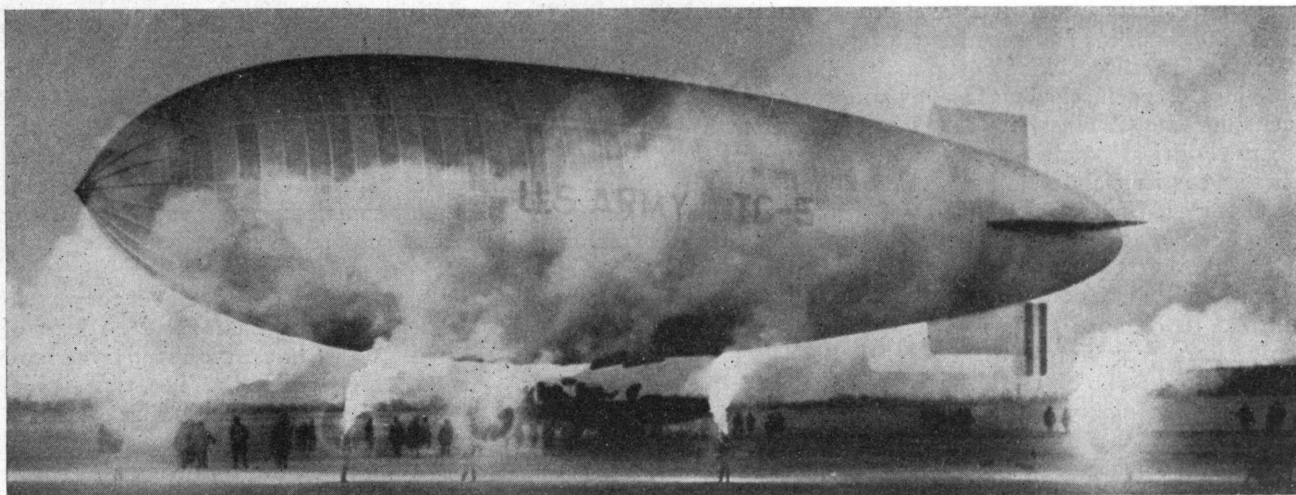
WHILE the non-rigid airship was historically the first aircraft developed practically, and while it was found to have inherent limitations on speed and size, yet the type has been of great utility and continues to survive for special purposes. The non-rigid must be relatively small to be efficient and is best operated in winds that do not exceed about one-half of her sixty miles an hour speed. Nevertheless, during the War, non-rigid airships were used extensively by the American, British, and French Naval forces for anti-submarine scouting and to convoy vessels through dangerous areas. Their ability to hover or proceed slowly gave them unique value as escorts and their endurance made it possible for them to keep a wide area under surveillance from dawn to dark. Such duty was clearly unsuitable for heavier-than-air flying machines which must keep going at high speed in order to keep in the air, and which rapidly exhaust their fuel supply.

During the ten years following the War, the application of aircraft to commercial use was intensively pushed everywhere. The airplane was immediately available as a high speed transport vehicle for mail loads over moderate distance. Its fatal enemy was and still is fog and low visibility, but it is practically unrestricted by strong winds. The non-rigid airship, while an ideal vehicle for fog flying, has neither the speed nor load capacity to compete successfully with the airplane. Consequently, the airplane was developed to attain great speed, range, and load capacity while the non-rigid airship remained as a Naval craft of very special use.

Recently, however, the Goodyear-Zeppelin Corporation has built a small non-rigid, the *Puritan*, in order to explore the commercial possibilities of the type. A gratifying degree of success has been obtained with modern engines and an improved structure, due to Dr. Arnstein.



COUNT ZEPPELIN, INVENTOR OF THE RIGID AIRSHIPS WHICH BEAR HIS NAME



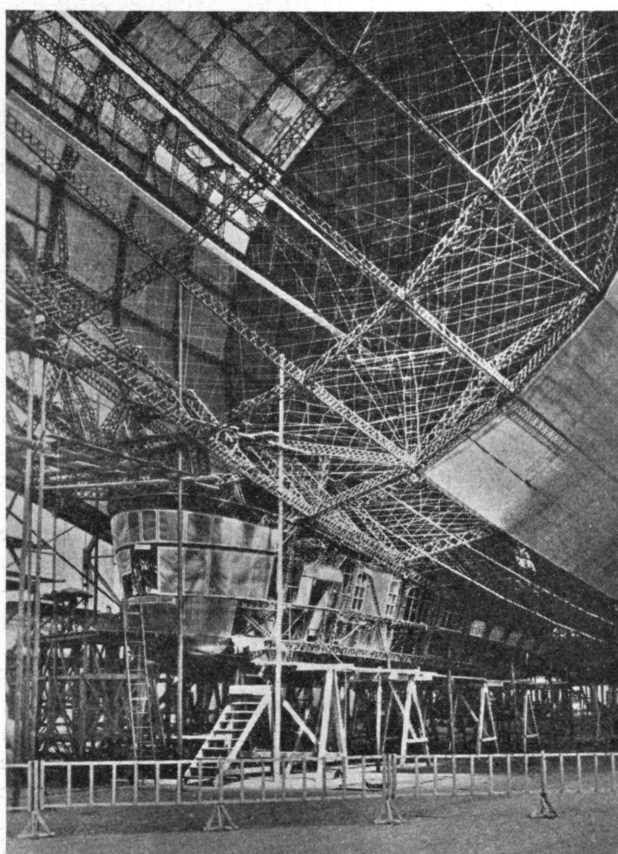
PARACHUTE FLARES BEING USED TO AID THE NIGHT LANDING OF A DIRIGIBLE

Wide World

and the firm is now constructing a fleet of small airships to be used for advertising, surveying, and pleasure. The *Puritan* class has a high speed of about sixty miles per hour with four passengers and a range of 400 miles at cruising speed. The first ship of the type has visited many cities in the eastern part of the country attended by a small squad of men with a motor truck equipment including a short mooring mast. Landings have been made on roofs of buildings and other restricted areas. Within two months of her launching, the ship had carried 600 passengers and had spent 180 hours in the air. The longest non-stop flight was 410 miles from Akron, Ohio, to Lakehurst, N. J. As a pleasure vehicle, such an airship compares with a sailing yacht in safety and comfort. There are no stability problems to harass the owner as in the airplane, and piloting is no more exacting than that of a yacht. In fair weather, one may slow the engines or even stop them and sail with the breeze. The profound coolness and quiet of a mountain top may be enjoyed over any inland city on an August afternoon. One may even smoke a pipe in peace, as the noninflammable helium gas eliminates the risk of fire, inherent in previous hydrogen-inflated ships. It is apparent that attractive possibilities are in the offing for the man who would escape from the ground, in a leisurely, safe manner.

I WILL not go into the semi-rigid type of airship, except to say that in the hands of the Italians, the type has been well developed and given excellent speed and range. Such an airship has been successfully flown from Italy to Alaska across the North Pole by the Amundsen-Nobile expedition. The loss of the ship on Nobile's second expedition should be regretted, if the disaster causes a stop to further development of this type. In general, however, I believe the semi-rigid airship is fragile and only suitable for intermediate sizes between the non-rigid and the rigid types. For transoceanic work it is not large enough, and for overland work the airplane is superior. Perhaps there are special regions, such as the Mediterranean, where the distance to be flown and weather conditions make its use advantageous. We have one semi-rigid airship in this country, built by Goodyear for the Army.

FOR long voyages and for heavy loads, the rigid airships appear to have a unique position. In the hands of the Germans the Zeppelin, by 1918, had reached a high degree of perfection as a Naval scout. By the same date, its use as a bomber had been effectively blocked, first, by the greater speed of airplanes, and second, by the invention of the incendiary bullet. The latter was sure death to any hydrogen-inflated airship or kite balloon. After the Armistice, however, the Zeppelin appeared to be ready for commercial exploitation and with helium gas



A PORTION OF THE "GRAF ZEPPELIN" AS IT APPEARED WHEN UNDER CONSTRUCTION IN GERMANY



available in this country, its Naval utility was assured. Over 100 Zeppelins had been built, of progressively superior performance, skilled operators were available and individual Zeppelins had made many noteworthy flights, including one of ninety-six hours to East Africa and return. Political conditions, nevertheless, prevented the obvious commercial development of the Zeppelin airship by Germany. Under the conditions of the Peace Conference, Germany was unable to build any aircraft of potential military value for nearly ten years. During this period two small Zeppelins were allowed to be built for a daily passenger service from Berlin to the Swiss border. In a period of ninety-eight days in 1929, one airship, the *Bodensee*, made eighty trips on schedule, ten days were spent on repairs, flights were canceled on three days because of bad weather. On these trips 2,380 passengers and 17,600 pounds of mail and express were carried without accident. The gross mileage exceeded 32,000.

Further political complication put a stop to this very promising commercial service, and both airships were seized by the Allied Powers. A few years later the Zeppelin Company was permitted to build the *Los Angeles* for our Navy. Upon completion, the company made delivery, at its own risk, by air to Lakehurst, N. J. The 5,100-mile voyage was made without incident in eighty-one hours. The recent double crossing of the *Graf Zeppelin* is too well reported to need more than mention here. I say "too well reported" because the minor discomforts of the first commercial transatlantic passengers were so played up that the technical achievement is ignored.

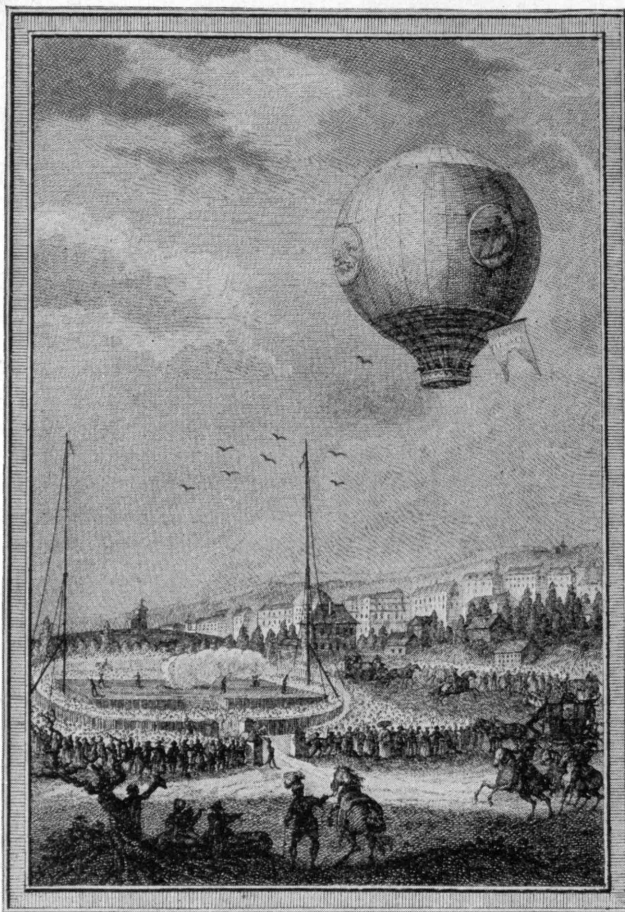
During these years since the War, I wish to make the point that German commercial utilization of Zeppelins was blocked. This country and Great Britain did, however, proceed with the independent development of rigid airships, having been impressed with the Zeppelin war service. The British built the *R-34* after the Zeppelin *L-34* and General Maitland and Major Scott, in 1919, sailed her to Long Island and back successfully. The American Navy's *Shenandoah* made a 9,000-mile flight around the rim of the country with three stops. Unfortunately the *Shenandoah* was later lost in a severe squall such as wrecks vessels, and this taken with the loss of the British *R-38* while undertaking trials by her acceptance board, did a great deal to discourage further airship enterprises.

But the possibilities of aircraft of a hundred tons in weight with a carrying capacity of another hundred tons and able to span the Atlantic could not be ignored in spite of disasters to pioneering enterprises by others. The Goodyear Tire and Rubber Company of Akron acquired the American rights to Zeppelin patents and designs and formed the Goodyear-Zeppelin Corporation. The Zeppelin Company of Germany contributed their experience in the person of their chief engineer and a group of key men. The Navy Department has now contracted with Good-

year-Zeppelin for two helium-inflated airships of unprecedented size and strength. The type is designed to utilize American experience as well, and while following the general lines of Zeppelin practice, incorporates many new features. The principal changes from former airships are permitted by the great size, 6,500,000 cubic feet, nearly twice the *Graf Zeppelin*. The structural strength is greater for the same percentage of weight and with eight independent engines, such ships become practically immune from failure of propulsive means. The greater size also permits improved structural elements. Furthermore, helium makes it possible to install the engines inside the hull in engine rooms, thus suppressing the externally suspended engine cars. A novel feature is an airplane hangar for five fighting planes with special means for launching them while in the air and for taking them on board again.

The basic design for the Navy has been modified for commercial purposes by the omission of airplane stowage, guns, Naval equipment, and so on. Instead of this special Naval equipment, accommodations can be provided for passengers and mails.

A group of New York shipping interests have recently submitted to the United States Shipping Board a proposal to inaugurate a weekly transatlantic two and a half day airship service, using Zeppelins of this design. Their estimates allow an ample margin of fuel for the crossing in bad weather and twenty-five tons of pay load to be devoted to mails and express and passengers. It is reasonable to allow for forty passengers plus 10,000 pounds of mail. For a service between Honolulu and California, the same ship could accommodate 100 passengers and 5,000 pounds of mail. Such figures are significant of what we may expect of future transoceanic (Continued on page 442)



THE THIRD AERIAL VOYAGE MADE IN FRANCE. IT TOOK PLACE ON JANUARY 19, 1784, UNDER THE DIRECTION OF M. JOSEPH MONTGOLFIER. FROM AN OLD ENGRAVING

# AIR TRANSPORTATION

*America assumes the lead in commercial aviation*

BY DANIEL C. SAYRE

PROSPERITY, expansion, industrial recognition — such is the meaning to American Air Transportation of the two years, 1928 and 1929. For the first time in its post-war history, commercial aeronautics has been able to take a long breath and think of things besides the problem of mere survival. The beginning of 1928 found a creditable network of air mail routes, 11,000 miles in length, operated by a dozen or so private contractors, one or two passenger lines, and innumerable local operators running schools, taking photographs, operating cross-country taxi services under special arrangement, and carrying on other general activities. A few of the mail operators were making profits, but the remainder were going regularly into the red. As for the local operators, it depended on the weather, the backers, the local air-mindedness, and a few other uncertainties whether any profit showed up in the statements. The end of 1929 should see all the air mail operators making large profits, a complete passenger service well under way, and an American airway system of over 30,000 miles. The local operators will band together and will be running bigger and better schools, taking more pictures, selling more planes, and relegating their cross-country services definitely in the secondary position of supplementing the regular airlines.

The beginning of 1928 found the industry backed with a capital barely sufficient for its operations. This year it is so flooded with money that several of the more recently formed investment trusts are finding it very difficult to buy anything with their huge resources. A combination of record flights, a rich and paternal Government, an unprecedented stock market condition, and an increased air-mindedness, or rather air-investment-mindedness, on the part of the public, has certainly done wonders towards the fulfillment of the promise for real and complete air transportation.

Aside from the astounding market conditions of aeronautical stocks, the biggest financial plum ever dropped into the laps of the aeronautical interests was bestowed on the air mail operators last July when the cost to the mailer was dropped from \$3.20 a pound to \$1.55. The loads handled promptly and quite universally doubled in volume. The delighted air mail men who are still being paid their old poundage rate and whose equipment needed

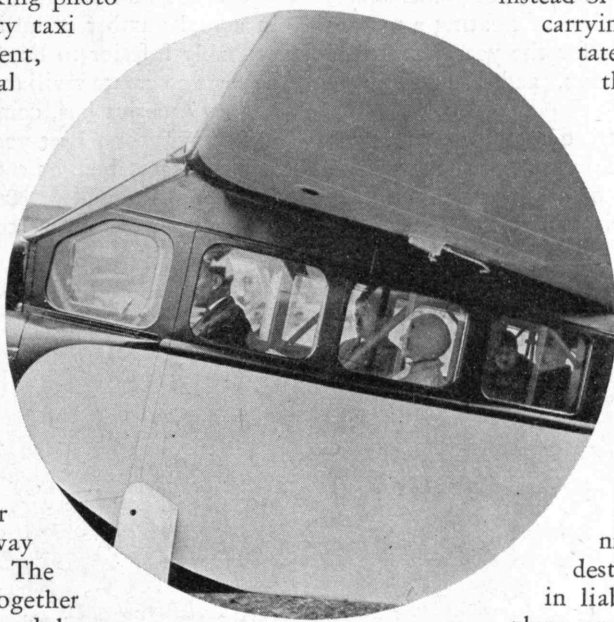
little expanding, have indeed reaped a rich harvest. The first of the mail contracts comes up for revision next September, and a reduction in the revenue paid the contractor is expected, but even that is no great source of anxiety. All the operators have paid their way out of debt and it is one thing to face a reduction of profits, and entirely another to be confronted by the problem of sheer survival. The air mail is more than ever here to stay.

The development of air mail in this country instead of the development of passenger carrying as in Europe has been dictated by the different geography of the two continents, the existing transportation systems, the contrasting government policies and by the common transportation principle that passengers cause more bother and bring in less revenue than the other class of traffic.

Air mail is easy to handle, it is brought to the field in a government truck, tossed into a compartment of a small, single-seated, single-engined plane, and flown by day or night until it is unloaded at its destination. The carrier is limited in liability to the value of a small plane, one pilot, and the value of the mail damaged through his own negligence. Moreover, the carrying of mails pays the carrier in the neighborhood of  $\frac{1}{4}$  to  $1\frac{1}{2}$  cents per pound-mile.

Express could be described in much the same terms, except that it pays the operator generally less to handle it, since roughly half of the amount paid by the shipper goes to the express company and its use is curtailed by the lower postage rates.

Comparatively, aeronautical passengers are a bother of the worst kind. They must be brought from the center of town to the air field in a comfortable bus, there must be waiting rooms in town and at the field, and, lest they be injured walking into propellers or straying out onto the field, they must be carefully escorted into a large, expensive, multi-motored ship. They must be furnished toilets and diverted from thoughts of danger and airsickness. They must be given occasional rests on long journeys, and as yet they cannot be flown at night. The operator as a common carrier is, moreover, liable in case of death or injury due to his own negligence, and in return for all this, the usual fare received is 10 cents a passenger-mile, or on the average about  $1/15$  cents per pound-mile.





Nevertheless, the time has finally come when passenger services are developing on a sound basis. Companies which are already carrying the mail, or railroads desiring to supplement their services, being able to distribute their overhead, are now offering passenger accommodations. Of the sixty-five scheduled American airlines listed by the Department of Commerce, forty-four indicate passenger accommodation, but the passenger lines are the offspring of the mail lines, and it is justly so.

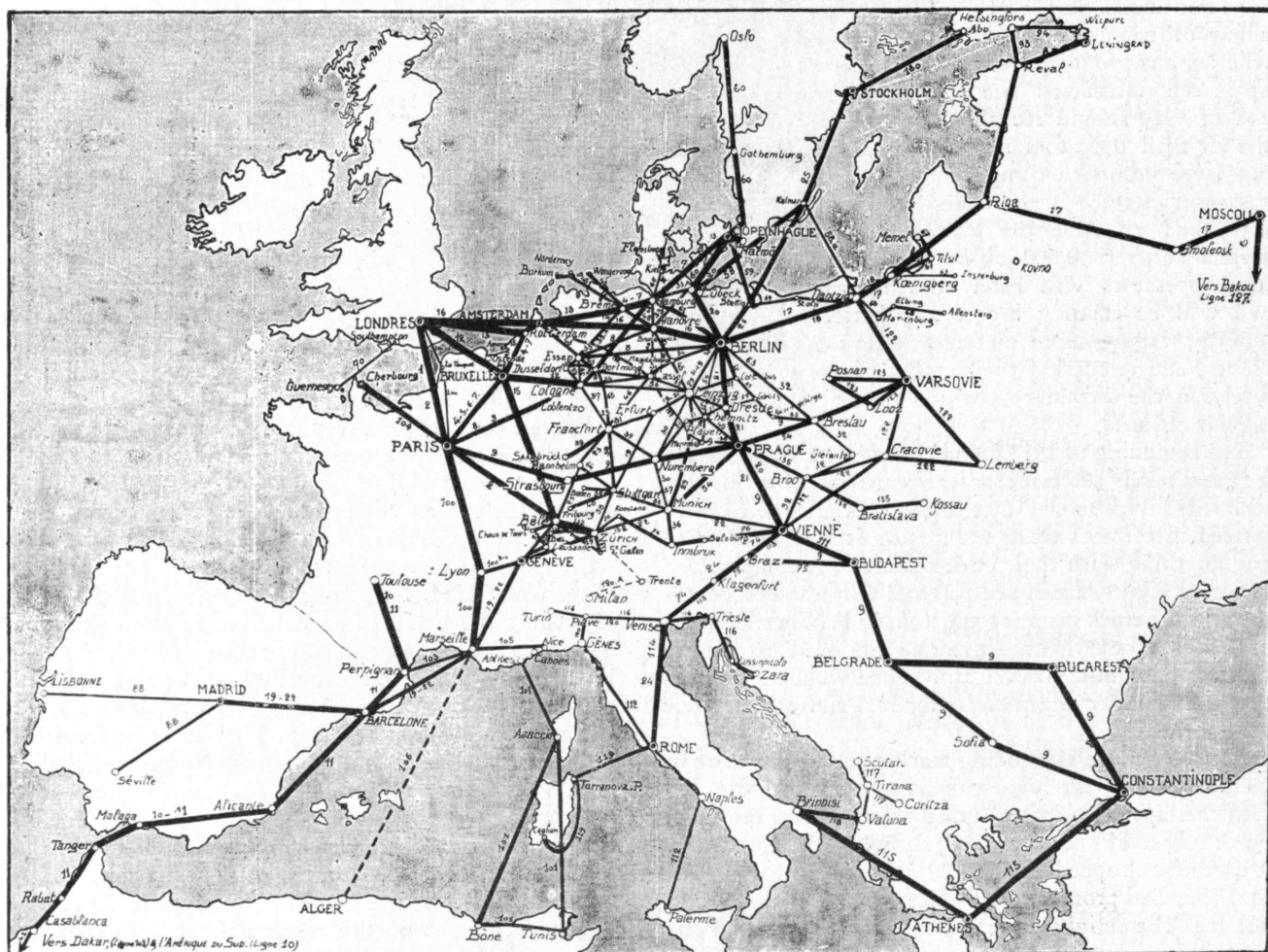
Consolidation and affiliation has affected the airlines very little, at least so far as one line merging with another is concerned. Many of the large lines are allied with groups of manufacturers, but there have been only two cases of line combines of any importance. With the local operator, however, combination has been quite extensive, and groups are forming which will bring dozens of airports under unified control. The local operator, who is always a sales agent for at least one type of plane, shares with the manufacturer the problem of creating a market for disposal of the plane quota for the year. Improved schools, more attractive quarters, and lower upkeep charges are the present trend.

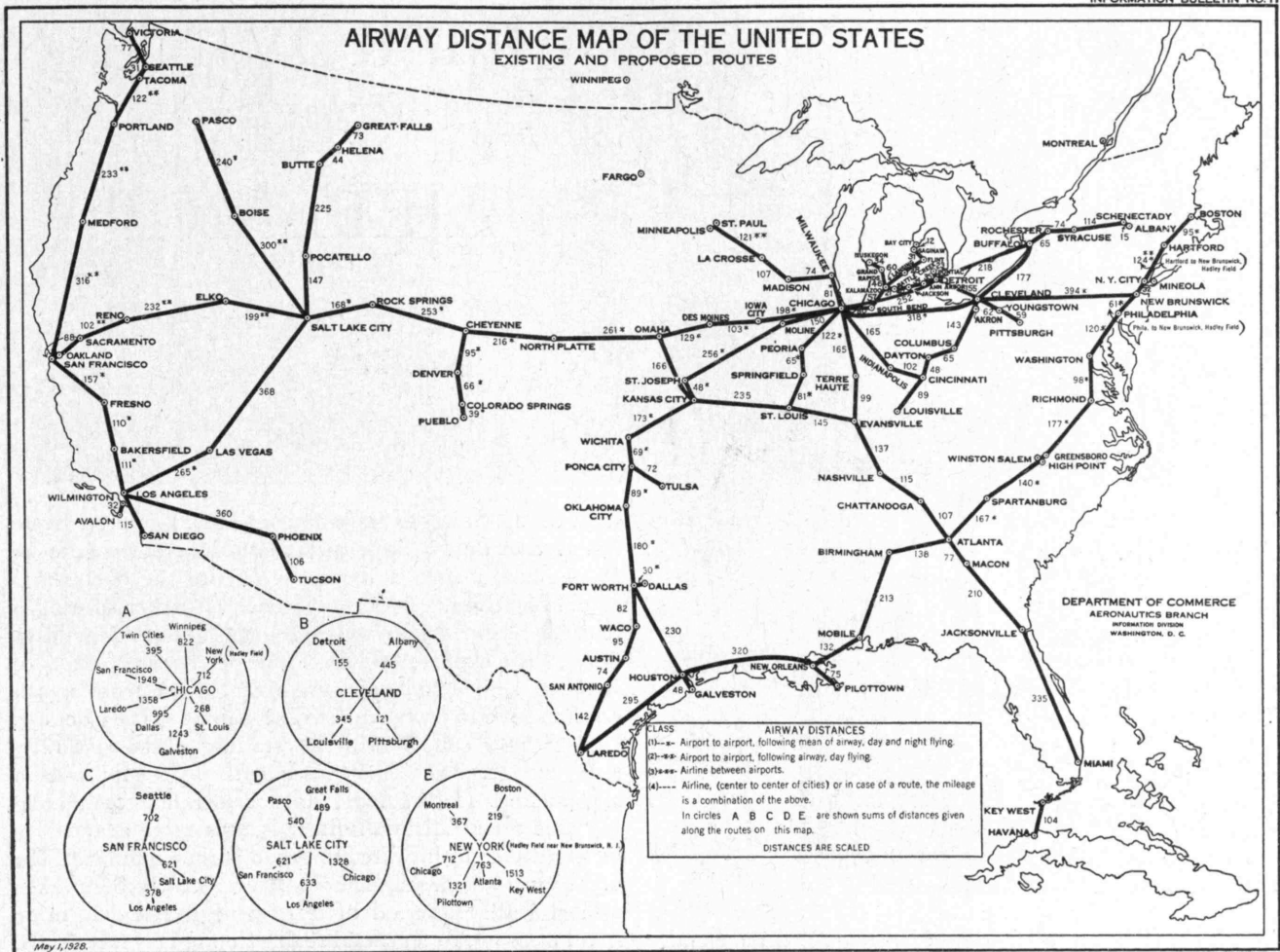
Having straightened accounts at home, the American air transport interests are launching one of the most ambitious aeronautical programs of all time, in the lines being opened by the Pan-American Airways. Eventually

these will look on the map much like a huge figure eight, with its top loop encircling the Gulf of Mexico and the Caribbean, and the more southern loop girdling the entire coast of South America as far south as Santiago and Buenos Aires. Holding American foreign mail contracts, at the maximum legal mileage rate, mail concessions from the governments flown over en route, and competing for passengers with ocean vessels of low speed, this company seems to have a brilliant future for its financial success and it will be a telling blow in the competition now under way between the United States, Great Britain, France, Italy, and Germany for South America's aeronautical trade.

America is in no respect falling behind in the development of aviation. The mileage flown over her scheduled airlines last year was 10,400,000 miles, roughly as much as that flown in France and Germany together. Next year should see our mileage equal to the entire European total. In actual number of military ships the United States is probably inferior to England and France, but in the endeavors to create civilian reserves of personnel and other factors America has, consciously or not, far outstripped her competitors. Last year the non-military fliers of the United States bought over 4,000 planes, flew over 50,000,000 miles, and 6,000 pilots are now licensed by the Department of Commerce. There are not over four hun-

CARTE GÉNÉRALE DES LIGNES AÉRIENNES INTERNATIONALES EN EXPLOITATION -- GENERAL MAP OF INTERNATIONAL AIR LINES IN SERVICE



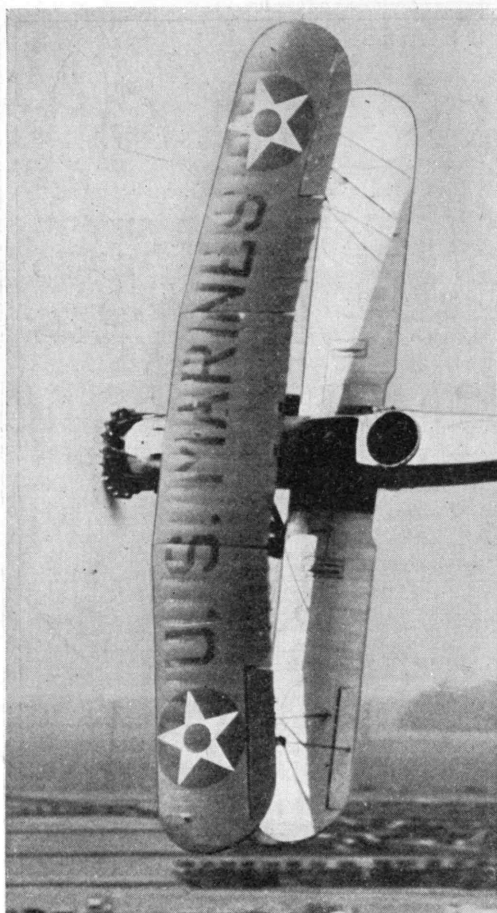


dred airplanes on the entire register of civilian aircraft in England, and in France popular flying by local operators and private owners is comparatively negligible. Germany alone has succeeded in building up a formidable civilian reserve, but it is her sole reliance, since she is prohibited by the Allied Commission from supporting a direct military air service.

In the matter of airways America is holding her own with the European countries. The number of respectable airports in this country is now well over 1,000, and almost every municipality of any size or pretension is making provision for an air terminal. The money appropriated for such a purpose has exceeded the \$1,000,000 mark. The fields themselves, while not yet as beautiful and attractive as those of Europe, are being constantly improved and comfortable waiting rooms, restaurants, and traffic facilities will soon be the rule, rather than the exception. The Department of Commerce has surveyed, laid out, and maintains over 20,000 miles of airway with a total of 274 marked and prepared emergency landing fields with a lighted mileage of 7,886. The development of night commercial flying has been very much an American accomplishment. The European airways carrying mostly passengers have fallen well behind in the matter of night operations. Imagine the military value of a reserve of several hundred air mail pilots whose training in night operations is positively perfect.

Another development in American air transport which alone would make this year an important one, is the entry of the railroads into the field, commented upon on page 406 by Elisha Lee, '92, Vice-President of the Pennsylvania Railroad. Having learned their lesson of cooperation from their experience with the bus lines, they are realizing that they can supplement their services with this new means of transportation to mutual advantage. And truly the aid the railroad can give an air line is, at least at present, a good deal more practical than the airway's help to the railroad. As the airway enters more and more into the serious business of passenger transportation it is going to need the closest sort of cooperation from the railroads. Similarly, there could be quite an improvement effected in the air mail service today if there were better cooperation in routing the mail over the fastest combination of the two services in response to variable weather conditions. The German air and rail lines are both government controlled, and there is the closest sort of cooperation between them, with the consequence that one can utilize the airlines in the most practical way in saving time and trouble. American railroads should also be invaluable with their huge resources of transport experience and public confidence. If the American public will not patronize an airline laid out by Lindbergh, operated by the Pennsylvania Railroad, in planes built by Ford, they just won't patronize and that's all there is to it.





Courtesy  
Airway Age

# IMPROVING THE AIRPLANE

*Some recent developments in  
aeronautical design*

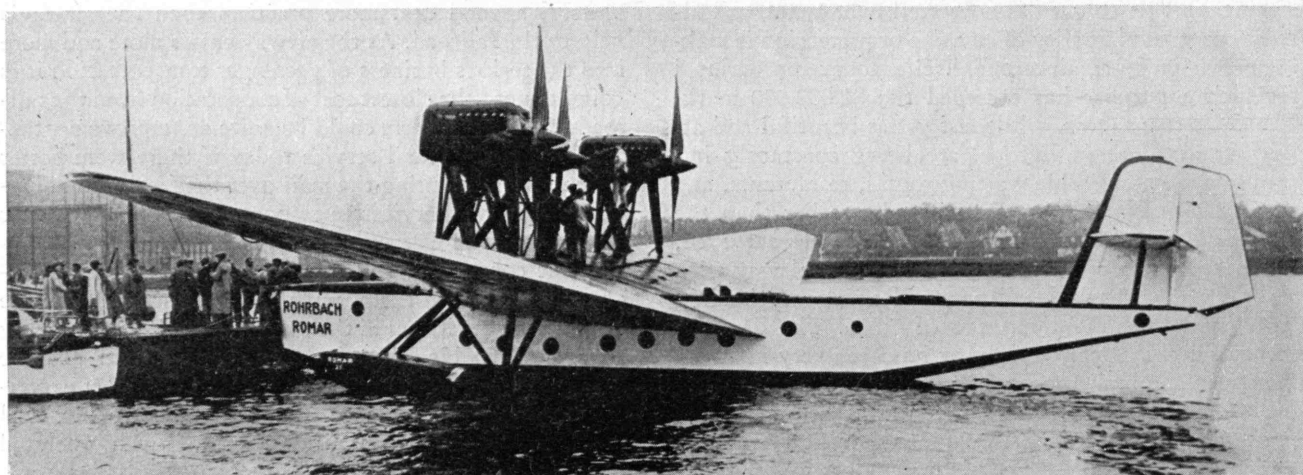
BY MANFRED RAUSCHER

RECENT spectacular developments in commercial flying have tended to overshadow completely the technical advances that have accompanied them. Most of these advances have, indeed, been neither startling nor revolutionary; but they have, nevertheless, been real and distinct, and at least a few of them are well worthy of being considered in some detail.

One of the trends most easily recognized, and therefore most generally appreciated, is that toward aircraft of larger size. This development is one to be naturally expected, for both passengers and cargo can be transported

more economically in large batches. It is, however, by no means true that a large airplane is inherently safer or more efficient than a small one. Quite the contrary is true: in machines of very large size the structural weight tends to become excessively high, and it can be kept down only at the expense of safety. The detrimental effects of size may be overcome to some extent if the wing area is not increased in proportion to the weight of the machine. Under these conditions, the stalling speed naturally rises, and larger fields are consequently needed for take-off and landing. The seaplane, since it operates from a landing area practically unlimited, is thus more adapted to development in this direction than is the landplane. The vigor with which seaplane work has recently been taken up again after a period of relative neglect is due, in no small measure, to a general realization of this fact. Thus, while only a few years ago the large landplane was easily the most impressive and the most advanced type of commercial heavier-than-air craft, it is the seaplane that represents today the highest in ambition and the utmost in radical progress.

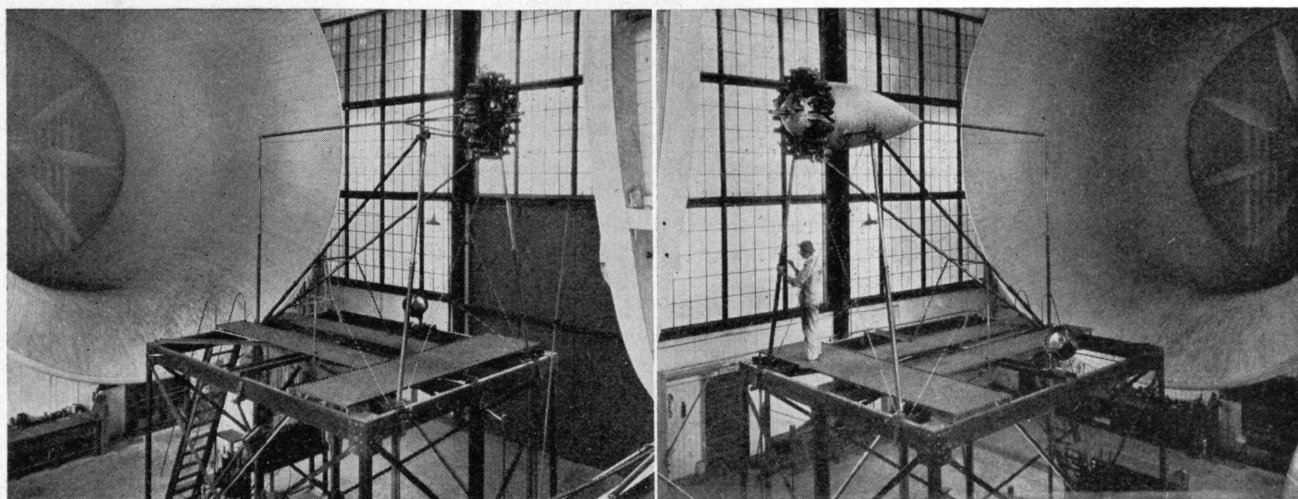
What stage has been reached in seaplane design is suggested by the accompanying photograph of the Rohrbach *Romar*, an all-duralumin flying-boat of twenty tons gross weight. In this machine the wing loading has been pushed to twenty-five pounds per square foot —



Wide World

THE ROHRBACH "ROMAR," A STURDY GERMAN FLYING BOAT DESCRIBED ABOVE





Courtesy N. A. C. A.

TESTING THE EFFECTS OF COWLING FOR RADIAL ENGINES. LEFT: ENGINE ALONE. RIGHT: CONVENTIONAL COWLING. BELOW: NEW LOW-DRAG COWLING

corresponding to a stalling speed in the neighborhood of seventy-five miles per hour — and the compactness thus secured has made it possible to keep the structural weight of the *Romar* extremely low, so that a useful load equal to the empty weight of the plane can be carried. The hull has been given a very sharply keeled bottom, and a bow almost like that of a destroyer. As extended tests have proved, these features make the *Romar* quite safe to land and to take off in waves of ten feet or more, in spite of the unusually high landing and take-off speeds. It would seem that the *Romar* deserved fully the designation given it by its maker, namely that of "a seaworthy flying-boat for ocean service."

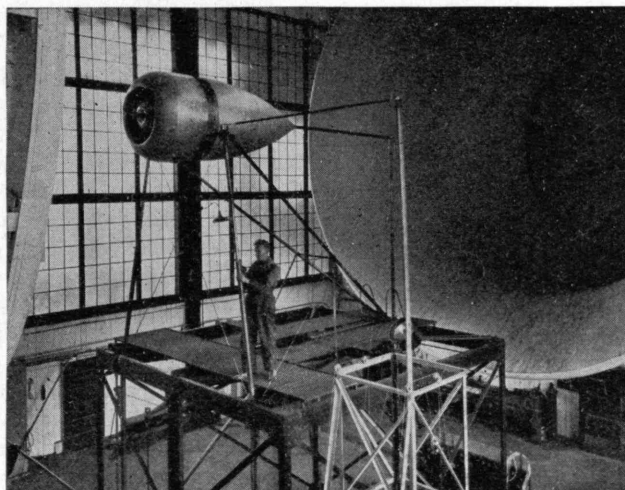
THE use of metal in airplane construction is making slow but steady headway. On account of the small number of machines that are commonly built to any one design, metal aircraft are still relatively expensive; also, they still tend to be rather heavy, because too little has yet been learned about the efficient building of the delicate structures of thin sheets and strips of which an airplane is so largely composed. Metal construction is, furthermore, being held up in its development by troubles encountered with corrosion; and it does not seem improbable that the struggle between steel and duralumin for supremacy in aeronautical work will ultimately be decided by this factor. Already there are available "stainless" chrome-nickel steels, immune against corrosion, with excellent mechanical properties all round; but their price is high, and they are somewhat difficult to handle, both from the manufacturer's and the designer's point of view. Duralumin, on the other

hand, is not expensive, and it can be worked with great ease; but no protectives have yet been discovered that will definitely assure the stability and permanence of the qualities of the material. The tendency for some time has been away from ordinary steels toward duralumin; it remains to be seen whether the stainless steels will succeed in regaining part or all of the ground that has been lost.

VERY gratifying progress has lately been made in the development of higher speed. Cautiously but surely the 100 miles per hour, which have been such a nice commercial standard for many years, are beginning to be left behind; and the prospects seem fair that cruising speeds of 150 miles per hour will soon be reached and passed, at least for mail planes.

There are essentially three ways in which the speed of an airplane can be increased. One of them is hardly respectable enough to be mentioned: it consists in reducing the air resistance of the machine by simply clipping the wings — which is, of course, the same thing as raising the stalling speed. More honestly, though still not very efficiently, the higher speed can be obtained by the installation of a more powerful engine. Lastly, and ideally, the performance may be improved by careful "streamlining," *i.e.* by fairing the forms of the machine and all its parts in such a way that they pass through the air with the smallest possible disturbance.

In practice, the dubious credentials of the first method have not prevented it from being used widely and persistently. Thus, while only two or three years ago a landing speed of fifty miles per hour was



Courtesy N. A. C. A.

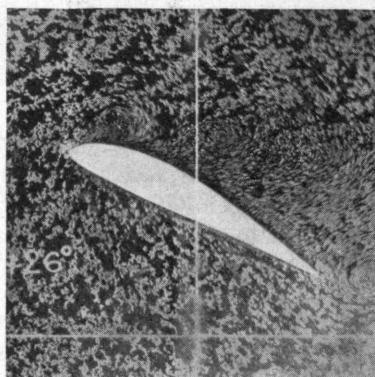
considered amply high in commercial work, one of sixty miles per hour is quite normal today. The latter figure seems, however, unlikely to be much improved in the near future, and further gains in speed must therefore be sought by means of higher engine power and better streamlining alone. A larger engine is undesirable not only because of its own weight and encumbrance, but even more so on account of the increased fuel load that it requires. The reason for the higher fuel weight, of course, is that the power expended goes up approximately as the cube of the flying speed, while the distance covered in a given time rises but linearly with the speed.

If streamlining is resorted to, a small amount of extra weight is still unavoidable in most instances; but this is likely to be fully made up for by the reduction that is now possible in the weight of the fuel carried, a reduction due to the fact that speed has been increased, and the flying time between terminals thus decreased, without any change in the rate of consumption of the engine. There is, naturally, a limit to what can be done by streamlining, and the ultimate appeal will consequently have to be made to power; but that this limit is not yet reached by far in the ordinary airplane can be seen from the advances that are still being made in the design of racers, the type of craft in which streamlining has already been pushed farthest. It is therefore rather discouraging to note how liberally airplanes frequently are being equipped with bigger and bigger engines without even the slightest attempt being made to refine the forms of the machine.

There seems, however, to be good reason to hope that new developments are about to begin, largely as a result of the work recently started in the twenty-foot wind tunnel of the National Advisory Committee for Aeronautics. This tunnel is large enough to allow the direct testing of actual airplanes, and a good deal of valuable information has already come from it. Distinctly the most striking accomplishment so far has been the evolution of a low-drag cowling for radial engines; this cowling, as adapted to the nacelle of a wing engine in a multi-engined airplane, is shown in the photographs on page 401, together with a cowling of conventional form, and also with the engine alone. According to the tests made, the drag of the complete nacelle with the new cowling is only twenty-four per cent of the drag of the bare engine, whereas a reduction to eighty-seven per cent of the drag of the bare engine was all that could be secured by means of the conventional cowling. The new cowling has already been installed and flown in several airplanes, increasing the maximum speed of one particular machine from 118 miles per hour to 137 miles per hour, and that of another from 157 to 177 miles per hour. In view of the simplicity

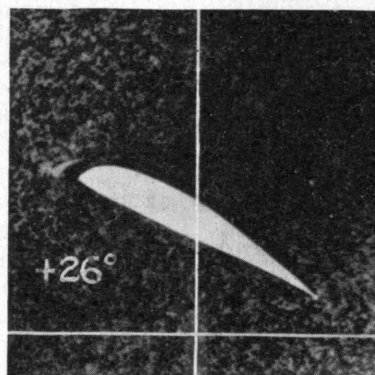
of the means by which they can be obtained, these results are extremely encouraging; and they indicate plainly what opportunity there still is for improvement in streamlining.

IN THE matter of passenger comfort, there has been hardly any improvement. The greatest nuisance has always been the noise, the "infernal racket," due to both the engine and the propeller. That nuisance is worse today than ever, for the advent of metal propellers has made it possible to run the blade tips at higher speed without serious loss in efficiency. As these speeds approach the velocity of sound, the hum of the propeller rapidly changes into a roar, and finally into a penetrating scream. Again, practically nothing has so far been done to eliminate the noise from the engine itself, and yet there is no place where a few pounds could be sacrificed to better benefit than in a carefully designed exhaust silencer. Without a proper appreciation of the difficulties to be overcome, one might thus almost get the impression that passenger comfort was simply not being considered in aerial transportation.



*A. S. M. E. Journal*

WIND FLOW AROUND SLOTTED AIR FOIL. (ABOVE) WITH SLOT CLOSED AND (BELOW) WITH IT OPEN



*A. S. M. E. Journal*

SAFETY is still sorely lacking in aviation. At least one of the hazards of flying, that of making a forced landing, has been deliberately increased by the general adoption of higher landing speeds, to which reference has already been made. This loss in safety has, however, been more than offset by the gains from improved engine reliability, from generally increased reserve power, from the installation of multiple power plants, and from the spreading use of wheel brakes. Very noteworthy progress is, furthermore, being made in the control of stalled airplanes and in the elimination of spinning. The problem here is fundamentally that of preventing the breakdown of the air-flow over the wing, which marks the "stall" and renders the airplane unmanageable. How stalling can be prevented by the use of a slot is illustrated in the photographs on this page. With the slot closed, the wing shown is very definitely stalled, the flow over the upper surface being highly turbulent and quite irregular; opening of the slot is seen to restore to the flow the smoothness and steadiness that it had before the stalling attitude was reached. With the smooth airflow there is regained the full responsiveness of the airplane to the will of the pilot. Already, automatically operating slots have been installed in a great number of the machines of the Royal Air Force, apparently with most excellent results. All over the world the slot is well on its way toward becoming a standard feature of every respectable airplane — and its general adoption may well prove to be the outstanding event in the whole development of flying safety.



# EINSTEINIANA

## *Facts and fancies about Dr. Einstein's famous theory*

BY NORBERT WIENER

IT is not usual for the silly season to open in mid-winter, but there must have been some lack of interesting press material which led the journalists to go out of their way to the extent of making a factitious scoop out of an unpretentious little paper published by Professor Einstein last January. In this they have been aided by a plentiful contingent of so-called scientists, who only emerge from their lairs when there is some wonder-working perpetual motion or annihilation of gravity to chronicle, and then retreat beyond the ken of physicist or mathematician. Between the journalistic Carpenter and the pseudoscientific Walrus, the public and the research scientist are left in a highly Oyster-like position.

This publicity has created a momentary bull market on Einsteiniana. A leading benefactor of Wesleyan has just presented to the institution the original manuscript of Einstein's January paper. The attendant publicity would lead one to believe that this is *the* manuscript of Einstein instead of *a* manuscript of Einstein. I may say that no word of Professor Einstein has ever lent color to that notion. His paper is but one of a series of which it is neither the first nor the last, nor in any notable way distinguished from the others. Einstein has recognized its conclusion as tentative and has now replaced it by a piece of work which in his estimation goes far beyond. We have this on the basis of direct advices from Professor Einstein himself, with whom members of the Institute's Department of Physics and Mathematics have been in correspondence. His correspondence bears the tone of scholarly dignity and magnanimity. The Sunday-supplementism and ballyhoo with which the Einstein theory has been invested in the minds of many is not created by Einstein and cannot be agreeable to him.

The general direction of the January Einstein paper is interesting and many of us believe it destined to be important. This direction, however, was already clearly and definitely indicated in a couple of papers last summer which have never come to popular notice.

I wonder where the newspapers ever got the oft-repeated assertion, "Only twelve men understand the Einstein theory." If you think over the matter for a minute it does not make sense. The word "understand" has various

connotations. It may mean the people who are actively engaged at the present time in doing research on the Einstein theory, or the people who are able to form an audience of such a research, or the people who have the background to understand the Einstein research. It may mean those who understand the theory at call, or those who understand it at thirty days. Of course at any particular time only a limited number of people are doing productive work on any particular phase of the Einstein theory. It

may be a dozen or it may be fewer. Of the people who have at some time had a sufficient knowledge to form a genuinely critical audience we must count not merely dozens but hundreds. These hundreds may seem a small number to the layman, but it must be remembered that highly specialized work, whether it is in mathematics or in physics, in chemistry, or in engineering, is really done by a limited group. I do not know, as I am no engineer, but I should suspect that the number of engineers who are able to give direct and authoritative information on the necessary specifications of steel cables for large span suspension bridges would not run into the hundreds. Or again, how many chemists could give an impromptu account of the characteristic reactions of the quinones of the phenanthrene series? I simply name these at haphazard to show that detailed counts of the number of people understanding the Einstein theory



M. I. T. Photo

PROFESSOR WERNER HEISENBERG, DIRECTOR OF THE INSTITUTE OF THEORETICAL PHYSICS OF THE UNIVERSITY OF LEIPZIG AND BRILLIANT CONFERRER OF EINSTEIN. HE HAS JUST COMPLETED A SERIES OF LECTURES HERE AT TECHNOLOGY

are nothing more than balderdash.

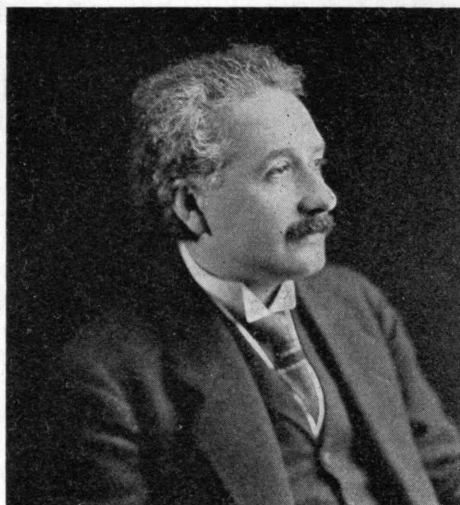
The pretended incomprehensibility of the Einstein theory has been used as capital by professional anti-Einsteinians. These have had a recent recruit in a churchman of prominence who has made his inability to understand it sufficient cause to utter a warning to the layman not to be misled by such tempting obscurities. Without prejudice to the cause of religion, I may remark that theological discussions have not at all times been distinguished by their character of lucidity.

EINSTEIN'S January paper is one of the many attempts that have been made to bind up gravitational relativity and electrical theory into a single whole. The most ambitious of these was perhaps that followed by Professor Hermann Weyl (now of Princeton) in his "*Zeit, Raum, Materie*." Other names to be mentioned are



those of Eddington, Schroedinger, Kaluza, Eisenhart, and Einstein himself. One and all have proved incompletely satisfactory to the mathematical physicist, and, as a matter of fact, Professor Weyl has himself departed considerably from his earlier standpoint. The earlier forms of the quantum theory could be rendered compatible with general relativity without excessive difficulty. It is only necessary to refer to the papers of DeDonder, of Fock, of Klein. But the trouble with all these pieces of work was that the formal quantum theory to which they attached them has become obsolete. The spinning electron of Goudsmit and Ulenbeck was first combined with quantum mechanical considerations in a reasonably satisfactory manner by Dirac, who changed the original difficult differential equation of Schroedinger from a second order equation to a system of first order ones. The Dirac equation has been harmonized with the old forms of gravitational relativity by J. M. Whittaker, son of Professor E. T. Whittaker of Edinburgh, but at the cost of raising the order from the first to the second. It is a matter of interest for some future scientists to investigate the precise physical consequences of Whittaker's theory, but one may be permitted to conjecture that it would involve a doubling of the spectrum lines in the Zeeman effect in the sun which does not appear to be verified by observation.

At this stage Einstein comes forward with a new synthesis of electricity and gravitation which makes no mention of the quantum theory. He introduces, unlike his course in the older theory, a universal parallelism of directions at all points of space and time. In this he goes half way back to our older pre-relativistic conceptions of mechanics. It is to be observed that this modification of the theory makes possible a comparison of spin throughout all space and time, and this is in full accordance with the demands of the theory of the spinning electron and of the quantum theory, which does not localize the electron, but spreads it through the universe. Although Einstein makes no mention of quantum-theoretical considerations, it was immediately seen by Wigner in Germany and by mathematical physicists of the Institute that the chief value of the Einstein theory was the fact that it rendered possible a good relativistic treatment of the Dirac equation. Dr. M. S. Vallarta, '21, and myself communicated our results on February 7 to the Editor of *Nature*, one week after the appearance of Einstein's paper in the New York *Herald-Tribune*. Our letter appeared on March 2, five days after Wigner's more complete report had appeared in the "*Zeitschrift für Physik*."



DR. EINSTEIN, WHO AGREES THAT HIS NEW THEORY NEEDS REVISION

Einstein theory stands or falls with the particular solution of Einstein equations known as the Schwarzschild solution. This solution is based on the assumption of spherical symmetry, statialness, and interchangeability of past and future, although weaker hypotheses actually suffice. In the case of the January Einstein theory the Schwarzschild hypotheses are inconsistent with the existence of an electromagnetic field, and indeed seem to lead to serious difficulties in the gravitational field.

It is, of course, possible that some of the hypotheses which we have assumed are to be discarded. The most likely of these is that of the interchangeability of past and future. It seems likely from a note at the end of Einstein's paper that his colleague, Dr. Müntz, has already obtained a fairly satisfactory result in this direction, and indeed this is confirmed by a communication we have received from Dr. Müntz, although the precise detail of this subject is not yet clear to me. There is a certain amount of evidence that this aspect of the new Einstein theory may prove useful in resolving one of the present difficulties with the Dirac theory which leads to an unaccountable ambiguity in the sign of the electric charge of the electron.

Here, too, we must wait for further advices before coming to any definite conclusion. Professor Weyl reports in the April *Proceedings of the National Academy* a new theory which retains something of the form of Einstein's theory, but gives up distant parallelism, at least as far as we can see to begin with. This theory seems to Weyl to apply just to this ambiguity of the sign of the charge.

It is interesting that Wigner has just communicated to Dr. Vallarta a critical account of his own work in which he raises difficulties with the physical meaning of distant parallelism. This chimes in precisely with the notions of Weyl. In the meanwhile, we must suspend our judgment.



THE AUTHOR OF THE ACCOMPANYING ARTICLE, AND RESEARCH WORKER IN MATHEMATICAL PHYSICS



# THE TREND OF AFFAIRS



Written this month by contributors prominent in aeronautics

## Assisting Aviation

THE Daniel Guggenheim Fund for the Promotion of Aeronautics has been in existence a little over three years, the most remarkable three years in the history of aviation. The Fund was formed for the general purpose of furthering aeronautical progress. It is not a permanent institution. Its deeds of gift totaling \$2,500,000 are to be spent, principal and interest, until the objective is realized.

Since its foundation in 1926, however, aeronautic science has advanced to such a degree and commercial aviation has developed so rapidly that the character of the Fund's work, even in so short a period, has necessarily changed. At one time the Fund engaged in such undertakings as granting an equipment *loan* to an air transport company for the purchase of three large multi-engined passenger planes. That was because it was sometimes difficult for companies of this kind to obtain sufficient capital to expand their operations. Obviously this is not true today, and there is an abundance of public capital for investment in both air transport and aircraft manufacture.

In the same manner the Fund found that the nationwide airplane tours undertaken at its request by Colonel Charles A. Lindbergh in 1927 and the late Floyd Bennett in Commander Byrd's North Pole plane in 1926 have served the purpose adequately without further efforts of this kind. The Fund is continuing with the distribution of accurate aeronautical information, but the public is now too familiar with the airplane to require graphic demonstrations of the sort mentioned above.

Certain activities of the Fund have, therefore, been curtailed by the advancement of aeronautics; others, however, have been greatly expanded, particularly in

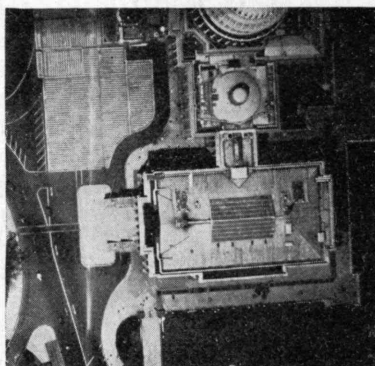
the field of scientific research. Following its policy of working through existing organizations wherever possible instead of setting up an independent enterprise of its own, the Fund has made gifts totaling \$1,200,000 to five engineering universities and other institutions for the purpose of research and instruction in the science of

aeronautics. Cooperating with the National Safety Council, the Fund organized last fall the First National Safety Conference, where for two days the leading engineers, manufacturers, and operators in aviation discussed all phases of safety in flying.

The first adequate weather reporting service for American aviation, the first full-flight laboratory for the study of fog flying, and the Safe Aircraft Competition represent the three major enterprises of the Fund of a scientific nature. The weather-reporting system, which was installed by the Fund on the airway between Los Angeles and San Francisco in June, 1928, was the first adequate aviation service ever to be arranged in this country (although

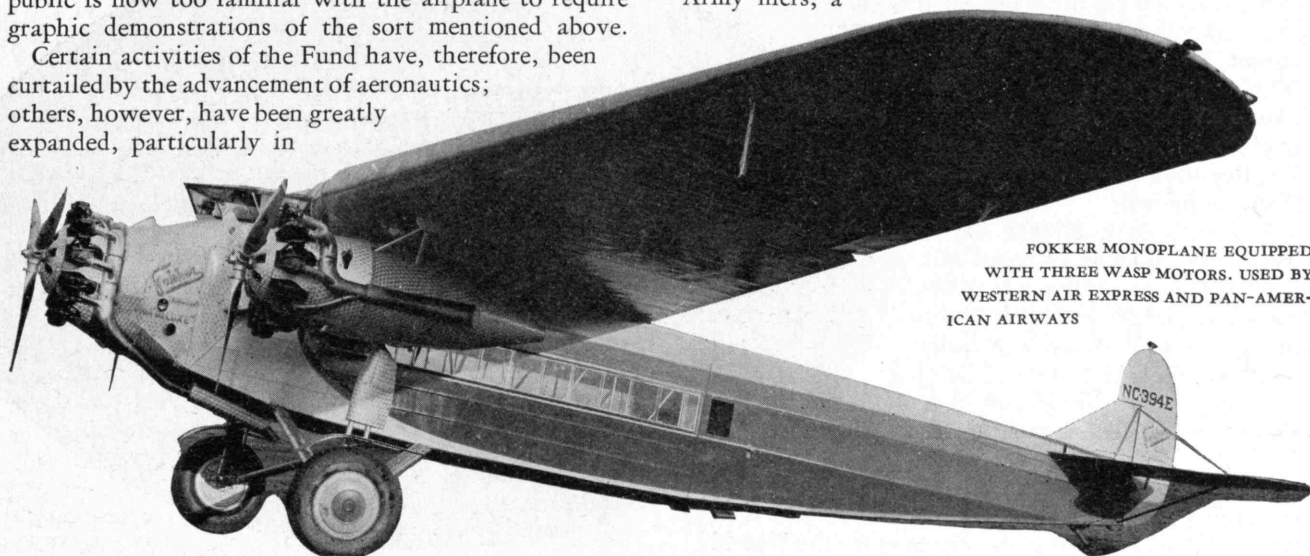
a common enough feature of European aviation), and it has proved to be an unquestioned success. The demands placed upon it have made it necessary to expand it considerably to forty observation points making reports six times daily to the two terminals.

In addition to equipping the pilot with information as to weather conditions, the Fund is attempting to develop an aircraft which can be safely operated in all types of weather. Under the direction of Lieutenant James H. Doolittle, S.M., '24, one of the best known of the Army fliers, a



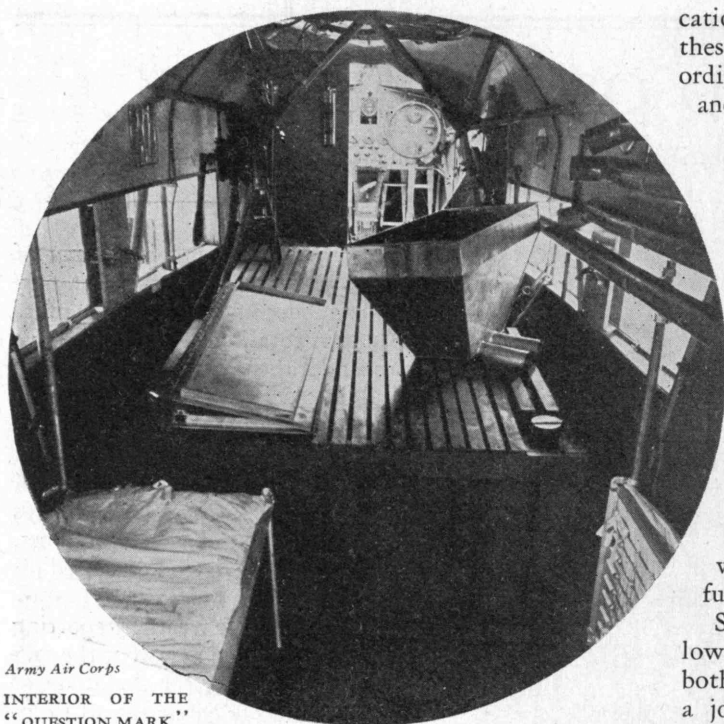
PRE-INAUGURATION PHOTOGRAPH OF THE NATIONAL CAPITOL TAKEN WITH FLARES AT 10:30 P.M., MARCH 3, BY THE ARMY AIR CORPS

Army Air Corps



FOKKER MONOPLANE EQUIPPED WITH THREE WASP MOTORS. USED BY WESTERN AIR EXPRESS AND PAN-AMERICAN AIRWAYS





Army Air Corps

INTERIOR OF THE  
"QUESTION MARK"

full-flight laboratory has been organized over an established airway where the operations of an airplane in all kinds of weather conditions, particularly fog, can be observed. Through the courtesy of the Institute, Professor William G. Brown, '16, of the Department of Aeronautical Engineering has been appointed Lieutenant Doolittle's technical associate. Two airplanes have been purchased for use in this work, and these are equipped with the latest flight instruments.

The Safe Aircraft Competition will close in October of this year. Twelve airplane manufacturers, one from Italy, five from England, and six from the United States, have submitted their entries, and several others have signified their intention of doing so. The Fund maintains a permanent office at Mitchell Field, Long Island, and before a plane is accepted for the competition, its specifications must meet with the approval of the Committee of Experts. As soon as the plane is delivered, it will be tested and graded on the basis of a point system. Two of the entries represent two very much talked about devices for stabilizing the airplane at slow speed and for preventing the stall—the Handley Page slotted wing and the Cierva autogiro.

As a necessary adjunct to its work, the Fund has pointed out that three per cent of the area devoted to railroads and roads in this country would furnish aviation with an adequate system of landing fields ten miles apart in any direction throughout the country; it has declared for uniformity in state and federal legislation as essential for the maintenance of the prevailing high standards of aviation; and it has organized a nation-wide campaign for the identifi-

cation of towns and cities by roof markings. Through these practical efforts it seeks to make sure that the extraordinarily rapid progress of aviation rests upon a factual and scientific foundation.

CAPTAIN EMORY SCOTT LAND, '07, (C.C.) U.S.N.

*Vice-President of the Daniel Guggenheim Fund  
for the Promotion of Aeronautics*

### *Spanning the Continent By Rail and Air*

AT the head of the grand staircase in Broad Street Station, Philadelphia, is a bas-relief, executed in 1895, entitled "The Progress of Transportation." One of the figures is that of a child carrying in its arms a crude model of an airship. Thus, more than a third of a century ago, the Pennsylvania Railroad management was thinking of the possibility of air transport, or at least was willing to approve a sculptor's conception of what the future had in store.

Since flying has become a reality, no company has followed more closely than has it the progress of aviation, both in this country and abroad. The idea of operating a joint rail-air service is a logical outcome of these studies. We desired to participate in the development of an air service in which passengers could have confidence, and which could be regularly and dependably operated in all seasons and under all weather conditions. The combined use of the railroad train by night and the airplane by day seemed to afford the ideal under present conditions.

This is the type of standard service to be offered in the near future, between New York and the Pacific Coast, as the joint product of the Pennsylvania Railroad, the Santa Fé Railway and Transcontinental Air Transport, Inc. It will cut the journey from ocean to ocean to approximately forty-eight hours, about one-half the present all-rail time. Passengers will use a Pennsylvania train overnight from New York to Columbus, Ohio, take an airplane to Waynoka, Okla., then a Santa Fé train for a



Army Air Corps

OBSERVATION PLANES  
IN FORMATION



night ride to Clovis, N. M., and will complete their journey with a daylight flight into Los Angeles or San Francisco, arriving in the late afternoon of the second day.

Plans are also being made to supplement this forty-eight hour rail-air standard schedule by a still faster special service for those who need maximum speed. This latter schedule will be based upon only one night in a train, with one night of flying, instead of both nights in Pullman cars. It will further reduce the time for the transcontinental journey to about thirty-six hours.

Has the airplane a real future as a commercial carrier? The Pennsylvania Railroad's answer is implied by its participation in the new transcontinental rail-air service. No well-advised man can doubt that commercial aviation has a real future. Will the airplane ever supplant the railroads, particularly, let us say, in the passenger field? There is not, so far as I know, the slightest expectation of such an outcome on the part of real students of the subject, and least of all among those who are most active in promoting commercial flying.

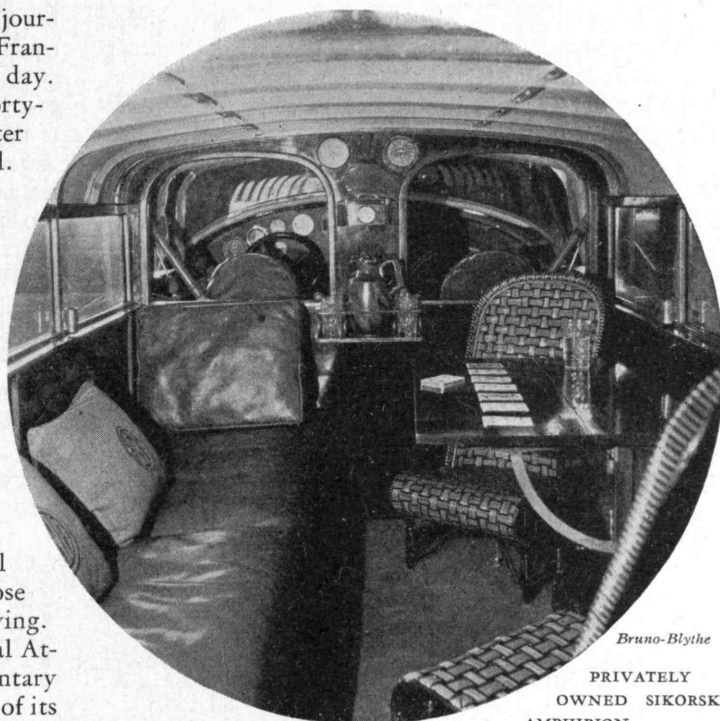
The airplane, as our Company's President, General Atterbury, has said, seems destined to be a supplementary agency of transport, developing largely a new field of its own among patronage able and willing to pay for extreme speed in passenger service. In the transportation of goods its greatest promise appears to be in the handling of express shipments of an emergency character, where again speed, rather than cost of transport is the controlling factor. In the carrying of the mails, its place is already securely established and certain to grow in importance.

ELISHA LEE, '92

*Vice-President, Pennsylvania Railroad*

### *Aerial Surveying and Mapping*

**D**URING the present period this comparatively new art is in process of emerging from the chaotic conditions that characterized its first decade of development.



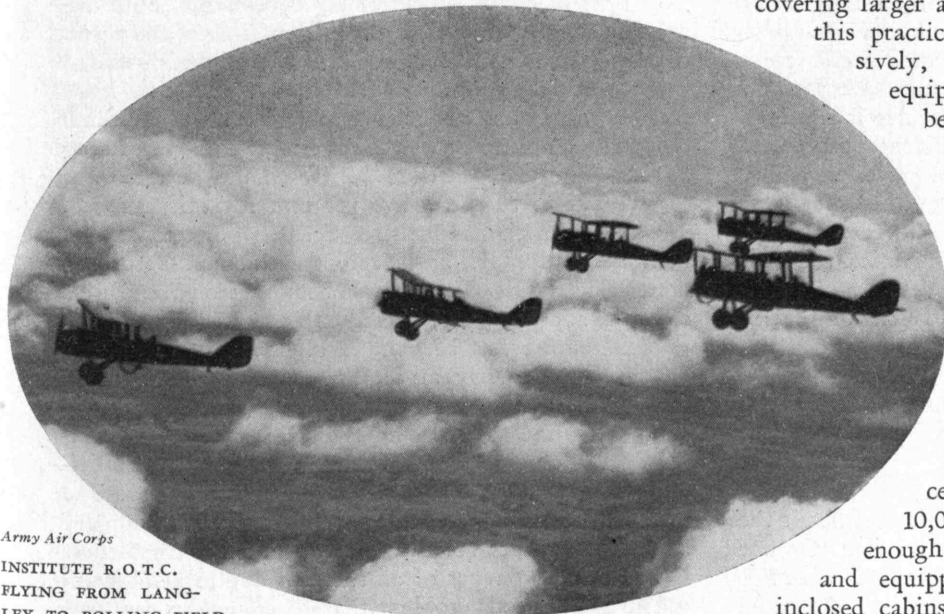
*Bruno-Blythe*

PRIVATELY  
OWNED SIKORSKY  
AMPHIBION

It is entering that stage where the experience accumulated by the map maker, coupled with an ever-growing discrimination on the part of the map user, is gradually evolving practical standards of equipment and procedure. Analysis shows the laws of economics to be at the bottom of this process of evolution, and necessarily so, as excessive cost of production hitherto has been the chief factor in retarding the development of an otherwise responsive market.

The last few years have contributed but little in the way of experimentation or new inventions. The latest advances in the art are to be found chiefly in improved appliances, in greater skill in their use, and in better technique. The modern trend is towards photographing from higher altitudes with wider-angle lenses, thereby covering larger areas with fewer exposures. To make this practicable has required improving, successively, cameras, airplanes, and dark-room equipment. Much that is worthwhile has been so accomplished.

The highly specialized cameras required in this work not only have been improved upon, but greater care is being devoted to their proper adjustment, a feature which often was neglected or completely ignored. Aircraft especially designed for photographic work is now supplanting the old time make-shift, rebuilt planes. It is common now to see so-called "photographic ships" of 15,000- to 16,000-ceiling capacity capable of climbing to 10,000 feet in fifteen minutes with still enough fuel left for four to six hours work, and equipped with spacious, glass-bottomed inclosed cabins affording nearly ideal conditions.



*Army Air Corps*

INSTITUTE R.O.T.C.  
FLYING FROM LANG-  
LEY TO BOLLING FIELD

In the dark-room, progress has been principally along the line of better apparatus for reproduction at different scales. This is especially important in commercial aerial mapping where the great majority of contracts involve enlargement from the original negatives. Exposures made from high altitudes usually are at scales ranging from 1,200 to 2,000 feet to one inch, while the finished maps call for scales ranging from 400 to 1,000 feet to one inch. Two-diameter enlargements have become common practice and are now made without any appreciable loss in definition. Even greater ratios of enlargement give acceptable results with modern equipment, and are used extensively.

The line of demarcation between government and commercial practice in aerial surveying has become more distinctly drawn than ever. While enlargement is now the keynote of commercial work, reductions in scale, by contrast, are principally required in government work in order to bring the photographic images to the small scales of publication so extensively used in Federal maps. This outstanding difference in practice is more far-reaching than is apparent on the surface. It affects not merely procedure, but technique as well, and the personnel in each of these fields has very different problems to meet and has to be specially trained to these ends.

The United States Government, of late, has been inclined to let contracts for aerial photographs for use in its surveys to commercial companies, and in this regard is beginning to follow European practice. Tri-lens and four-lens cameras, hitherto used exclusively in government work, are beginning to receive consideration for use in commercial surveys, but as yet their use remains quite restricted. Stereoscopic platting machines, so popular in Europe, have thus far found little application in this country, due in no small measure to lack of flexibility for different purposes, a common limitation in most mechanical processes, and to some extent to a misguided insistence on the part of the owners of such processes on adherence to their specific aerial survey methods. As against this practice, the wide freedom of choice and adaptability of the various non-patented processes now in use has won favor in this country.

GERARD H. MATTHES, '95  
Consulting Engineer

### *Air Travel, Present and Future*

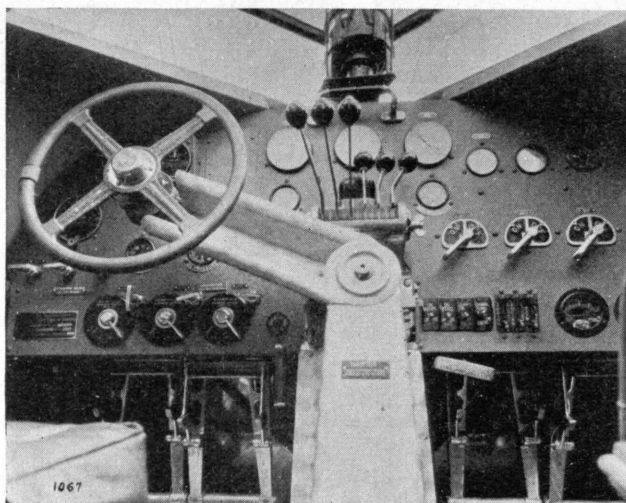
**F**REQUENTLY the business man is puzzled about the extent to which he may rely upon aviation. On one hand an enthusiast endeavors to convince him that one may go anywhere at any time by air. Someone else, who

has possibly made a flight under adverse conditions, is equally positive that aviation has not arrived as a transportation medium. As a matter of fact, the possibilities of air travel lie between these two extremes. Big business, it might be said, is just beginning to try out aviation. When this is done under proper conditions, the conclusion reached is that aviation is of definite value. If, however, too much is expected, the result is often disappointing.

With these reactions in mind, let us see what aviation really can do. In general, a trip may safely be made and on schedule over a regularly established airway. Such airways already cover a considerable portion of the country. They consist primarily of terminal fields located at the larger cities and between them, suitably placed, an ample number of emergency landing fields. This system of fields or "harbors" makes it possible to land safely in case of bad weather or an emergency. Such an airway is provided with beacon lights for night flying and a radio system which makes weather information available at each field and also keeps track of the various ships en route. This ground work is as essential to regular air travel as tracks and signals are to a railroad or harbors and navigational aids to waterborne transportation.

On the better equipped lines, strictly passenger-carrying planes are in operation. These are all luxuriously arranged, carrying between ten and fifteen passengers in comfortable arm-chairs. All the facilities of a limited train are provided, including dining car service. These "air liners" have radial air-cooled power plants, usually with three engines per airplane. This type of engine is extremely dependable, both because of its simplicity and the elimination of the water cooling system. On account of its light weight, the radial engine provides for ample surplus power with little sacrifice of pay load. It has been found that, to maintain schedules, ample reserve power is essential in overcoming adverse weather conditions. There should be a surplus of twenty-five to thirty-five per cent for this purpose. The noise which has hitherto been so objectionable is being reduced by lining the cabins with sound-absorbing material, suitable manifolds and mufflers on the engine exhaust, and the use of geared engines. In the past, the propeller noise has been more objectionable than the exhaust, particularly at cruising speeds. By means of propeller reduction gears which reduce the tip speed of the blades, the propeller noise has been greatly diminished. The crew of an "air liner" consists of an experienced pilot as well as a mechanic and steward. The mechanic is also a relief pilot. Before each trip the plane and power plants are carefully checked, so that there is little or no danger of an accident due to negligence.

The most serious problem that (Continued on page 444)



Courtesy, Pratt and Whitney Aircraft Co.  
CONTROLS ON INSTRUMENTS OF MODERN AIR LINER, EXTERIORLY  
SHOWN ON PAGE 405





## *Liberalization*

GENERAL Study requirements have been occupying the Faculty's attention this spring. Resolutions regarding them, proposed to the Faculty by a special committee, provoked excessive comment, were mauled during a two-hour debate, then adopted, then reconsidered, rescinded, referred back. Later, in essentially the same form, they reemerged from the committee, were re-presented, were not discussed, were adopted. In their accepted form they provide:

First, that General Studies "include those subjects of a general and non-vocational character which are offered for the purpose of giving the student an opportunity to broaden his education. They are designed to introduce him to fields of thought and interests outside of his chosen profession."

Second, that all undergraduate Course schedules be revised to require the equivalent of 240 hours of General Studies, of which 120 hours are to be elected by the student. This latter provision is to take effect not later than 1930-31 although in nearly all Courses the changes will be in operation next year.

Third, to the list of standing committees of the Faculty, there is to be added one on General Studies. This group, presumably, will be arbiter of what subjects fulfill the broadening and introductory restriction and at the same time offer suitable references that they bear good general and non-vocational characters.

## *Better Masters*

NEXT year, and thereafter, seekers of the Institute's degrees of Master of Science or Master in Architecture must comply with more rigid requirements. As at present, graduates of the Institute, or of other accredited colleges or universities, will be accepted as graduate students. Also the number of credit hours for the Master's degree will remain at 1,440, or a full year's work. But the minimum allowance of hours of "A" subjects becomes 1,080 instead of 800.

"A" subjects are those intended primarily for graduate students while "B" subjects, for which the candidate may, in the future, select only a quarter of his program, are subjects open to graduates and undergraduates. Naturally, the "A" subjects are more advanced in char-

acter, while the "B" group is composed of those offered in the senior year undergraduate programs. The hours devoted to the Master's thesis will continue to count as "A" hours but they may not exceed 600, nor fall under 300.

The custom has been to award the Master of Science degree with specification of Department only if the candidate is an Institute graduate, or if he has completed essentially the full requirements for the Institute baccalaureate degree, providing at least half his graduate work is elected in the respective field. Otherwise the Master's degree carries no specification. In the future, if 960 hours

of the "A" subjects, including thesis, are chosen in a single field of science or engineering, the degree will be with specification of the field in which specialization has occurred.

Next month 199 candidates are expected to receive Master's degrees under the old plan.

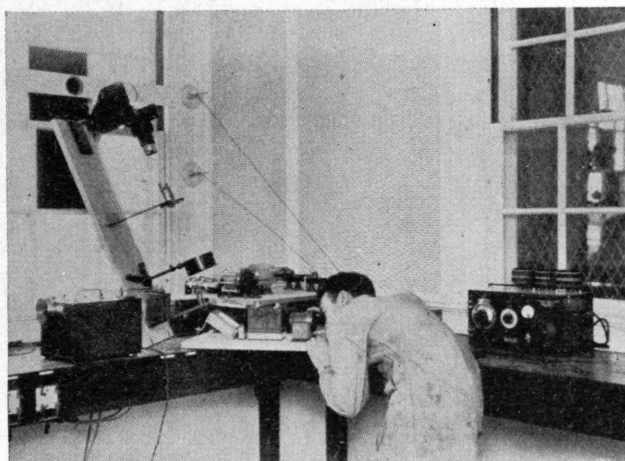
## *Visitors*

TWO of Germany's outstanding figures in the fields of science and engineering, Professor Werner Heisenberg, Director of the Institute of Theoretical Physics of the University of Leipzig, and Dr. Ing.

Theodor Rehbock, Professor of Hydraulics at the Technical University of Karlsruhe, have just completed a series of lectures at the Institute.

Professor Heisenberg, who at the age of twenty-seven already occupies a position of world prominence in his field, is the chief proponent of and one of the major workers in quantum mechanics. His series of nine lectures included discussion of the principle of indetermination which he developed some two years ago. He also spoke on the helium spectrum, on the theory of ferromagnetism and on metallic conduction.

Dr. Rehbock concerned himself with eight lectures on hydraulic experimentation in which he spoke at length out of his own long experience as an engineer. Before going to the Technical University at Karlsruhe, to build there one of Europe's most complete hydraulic laboratories, Dr. Rehbock had a distinguished career as an engineer on projects which included design of the great cantilever bridge across the River Weser, and plans for the defense works, a series of artificial islands, at the mouth of the La Plata River and in the Bay of Bahia Blanca in South America. He is now actively interested in the great Zuider Zee drainage project in Holland.



M. I. T. Photo

AT W IXV, TECHNOLOGY'S EXPERIMENTAL RADIO STATION AT SOUTH DARTMOUTH, THIS APPARATUS HAS BEEN DEvised FOR STUDYING SPEED OF LIGHT





Fairchild

COPLEY SQUARE, BOSTON. MANY INSTITUTE MEN RECALL THE SWAMPS ONCE EXISTENT TO THE WEST OF ROGERS BUILDING

Tertiarily comes Dr. D. Riabouchinsky, a graduate of Moscow University, the founder in 1905 of Russia's first aerodynamical institute, and more recently lecturer on aerodynamics at the Sorbonne in Paris. The revolution brought an end to the noteworthy investigations of Dr. Riabouchinsky, who, deprived of his private laboratory, has since carried on his studies in theoretical aerodynamics at Paris. His lectures are to begin early this month.

### *Third Public Health Institute*

ONCE again the Metropolitan Life Insurance Company is to cooperate with the Department of Biology and Public Health at Technology in the Third Public Health Institute, which the latter will hold from June 24 to July 13. It is the Department's aim in this, as in the two preceding meetings, to offer public health officers and other workers in that constantly broadening field an opportunity to study public health procedures and examine modern public health practices under experts.

### *Martin J. Shugrue, 1890-1929*

BY THE death of Professor Martin J. Shugrue, which occurred April 4 after an illness of several months, the Institute Faculty is deprived of the services of a capable teacher who maintained constantly an inter-

est in the personal as well as the academic problems of his students. He served, in addition to his instructional duties, and served ably, both as a registration officer in the Department of Economics and Statistics, and, from 1921 to 1928, as a member of the Faculty Committee on Undergraduate Scholarships.

One year following graduation from the University of Michigan in 1913 he joined the Institute's staff as an Instructor in Economics. His promotion to Assistant Professor came in 1916, to Associate Professor in 1924, to Professor of Political Economy in 1928. His special field was accounting and he was the author of "Problems of Foreign Exchange."

### *Pioneers*

APRIL also marked the passing of two of the earlier graduates of the Institute, George Hale Barrus, '74, and Charles Warren Goodale, '75, both members of the Alumni Council. Contemporary in their undergraduate life, though Mr. Barrus graduated in Mechanical Engineering and Mr. Goodale in Mining Engineering, each followed a professional career and each maintained an active interest in the progress of the Institute.

Except for a brief period as a member of the instructing staff, Mr. Barrus was in private practice as a consultant with offices in Boston. He was President of the Class

of 1874, and had been a member of the Council since 1909.

Mr. Goodale spent his active life in the West, particularly in Montana where he removed in 1885 and where he was associated with the Anaconda Copper Mining Company or its predecessors from 1898 to 1920. His early experiences in Colorado and Tombstone, Ariz., during the late Seventies and early Eighties were recounted in an article in *The Review* for April, 1926.

As chairman of the Bureau of Safety of the Anaconda during the war period when the number employed ran as high as 25,000, he achieved special distinction. For these "signal services in furthering the welfare and safety of workers in the mining and metallurgical industries of America," the Mining and Metallurgical Society of America conferred on him, on January 10, 1922, its Gold Medal.

### *Loyalty*

SIX alumni classes are engaged in the experiment of saving systematically to provide for the Institute's future, and the present graduating class is instituting a plan. The Class of 1923 was the first to adopt this plan and there have been enrolled by it and succeeding classes 2,187 subscribers to some form of class insurance. High pressure salesmanship which has often formed a part of the campaign methods of class committees was expected to provoke many lapses, but it now appears that nearly two-thirds of the original subscribers may be counted upon steadily to keep up their payments. This would mean that, when the plans begin to mature, they will provide the Institute with the equivalent of the income on well over a million dollars of extra endowment.

Excluding the Class of 1928 whose second payment does not fall due until this spring, 1,188 or 62.4 per cent of the original subscribers of five classes are paid up to date; 390 or 20.4 per cent are in arrears. These latter are being carried by premium payments advanced from the Institute's treasury. Unless the individual makes good after two years his subscription is defaulted and 329 or 17.2 per cent have thus failed to meet their obligations.

The original plan adopted by the Class of 1923 and copied by 1924 and 1925 was simple. Each subscriber insured himself with a \$250 endowment policy made payable to the Institute. The Class of 1926 placed all its insurance on the lives of seventeen members chosen by lot, the premiums being prorated among the subscribers. Sixteen of the seventeen were insured for \$5,000, the seventeenth for \$1,000.

The Class of 1927 reverted to the idea of one policy for each subscriber but chose \$1,000 units of ordinary life rather than the endowment form. Each of these policies named the Institute as beneficiary for an amount of \$100, the remaining \$900 being payable to whatever beneficiary the individual holder designated. All annual dividends are to go to the Institute.

To provide \$75,000 by June 1, 1953, the Class of 1928 refined the 1927 plan and added to it a cash option. Affluent subscribers might deposit \$100 cash with the Bursar last June and square all accounts. Twelve did. The remainder, 268, took out \$1,000 ordinary life policies

naming the Institute as sole beneficiary. When the loan value of these policies reaches \$100, the Bursar is to surrender the policy to the insurance company, take the \$100 and put it in the class fund. Meanwhile dividends (except those of the first year) are to be added to the class fund. It is estimated that all policies will have a loan value of \$100 prior to the tenth reunion of the class, the Institute meanwhile being protected against the death of the subscriber by a \$100 equity in the policy. Upon the surrender of the policy by the Institute to the company for its \$100 loan value the individual may redeem it from the company and use it for himself if he wishes. Otherwise it lapses. Between the surrender of the policies and June 1, 1953, compound interest is to convert the accumulations of the class fund into \$75,000.

### *Alumni Council: 138th Meeting*

FORTY-EIGHT members and guests of the Alumni Council met at Walker Memorial, March 28, to transact routine business and to be entertained. Aside from listening to the inevitable report of the Acting Secretary-Treasurer, the business transacted consisted of amending the By-Laws of the Association to provide for a life membership fee of \$75 in place of the old fee of \$50. Two committees were appointed by the chairman, Harold B. Richmond, '14, Vice-President of the Association, who was acting in the absence of the President, Alexander Macomber, '07. The first, to draw up resolutions on the death of James P. Munroe, '82, consisted of Isaac W. Litchfield, '85; Samuel C. Prescott, '94; and Harry W. Tyler, '84, Chairman. The second, to cooperate with the Institute committees on Open House, included Edward B. Rowe, '06; Frederick Bernard, '17; and Orville B. Denison, '11, Chairman. Frederick H. Hunter, '02, once again becoming articulate, reminded the Council that an All-Technology Reunion in 1930 should be considered. Accordingly a motion was passed that the Executive Committee consider the advisability of a reunion in 1930.

Leslie W. Millar, '02, of Chicago was a surprise guest and at the request of the Chairman he spoke at some length, deploring the lack of contact between the Institute and Illinois Alumni, pointing out that other colleges were more in the Chicago public eye, asking that a weekly Institute news bulletin be sent to all Alumni Clubs, and stating that it was the sentiment of the Chicago Alumni that they had been cut adrift by the Institute. By a happy coincidence the speaker of the evening was James L. Tryon, the Institute's newly appointed Director of Admissions. Dr. Tryon has been traveling extensively about the country, visiting schools, colleges, and clubs, and doing the type of contact work that Mr. Millar of Chicago felt was being so thoroughly neglected.

President Stratton, also present, elaborated on Dr. Tryon's description of the Institute's activities in effecting a better liaison between Technology and the outside world, and at the request of the Chairman he spoke briefly on the Administration's and Corporation's attitude toward undergraduate activities. This afforded an excellent introduction to the three minute talks of the undergraduate activity heads which were a part of the evening's program.





### *The Grab Bag*

**R**EUNION plans are now being brought out of the cupboard to be dusted off. The seven Classes holding reunions have enthusiastically chosen the seaside as the proper setting and golf as the major sport. There is also a certain sameness in the choice of resorts. East Bay Lodge at Osterville will entertain the dignified Class of '94 on its Thirty-Fifth Anniversary from June 21 to 24, the less staid, golfing Class of '04 from June 6 to 9, and the congenial Class of '09 from June 14 to 16. The Corinthian Yacht Club at Marblehead will house the reunions of the Class of '19 from June 7 to 9 and the Class of '24 from May 31 to June 2. The Review Editors have received a copy of *The Fourteen Pointer*, an amusing leaflet of information concerning the '14 Reunion which is to be held at The Riversea at Saybrook, Conn., from June 21 to 23. The Class of '99 Reunion will be held at the Hotel Griswold at New London, Conn., from June 14 to 16. The signs and portents augur seven happy and successful reunions, due largely to energetic secretaries, enthusiastic committees, and equally enthusiastic classmates.

Readers of *The Review* always welcome notes from Robert Richards, Secretary of the Class of '68. He recounts his experiences in Florida at the celebration of Founder's Week at Rollins College when an honorary degree was conferred on Edward W. Rollins '71. — Also interesting are the notes from another early Class, that of '74, which contain a brief but vivid picture of Honolulu. — It will be many years before the memory of James P. Monroe begins to fade in the minds of Technology men. The Secretary of '82 presents a happy account written in 1896 by Mr. Munroe of his own "humdrum chronicle" of existence. There is nothing humdrum in this account, from the loss of his first position, and his subsequent post at the Institute for the princely salary of \$800 a year, to his "mugwump" position

in the then Republican town of Lexington.

An interesting and constructive memorial to a late member of the Class of '92 takes the form of a center for the Sandwich Home Industries of Sandwich, N. H. The building will provide facilities for the sale of community-made products, an enterprise in which this '92 man had long been interested. — The Class Secretary of '99 has abandoned his idea of dog biting to obtain front page prominence for his Reunion. The idea, he found out from a series of newspaper clippings, has been used before, and must, therefore, be discarded. — There is a bare possibility that the Class of '01 may hold their next reunion at a unique spot — the corner of Broadway and 42d Street. The location would be fairly central for the members of the Class. There is a note of sadness in Dr. Rowe's notes when he recalls the now departed "lissome lines of youth" among his classmates who are so soon to celebrate a Thirtieth Anniversary.

The new Boston Garden, the scene of so many exciting hockey games this season, is the work of many Technology men. One of the architects is an '04 man, the other a '05 man, and another '05 man furnished the lamps used to light the building, while a '15 man is the superintendent there. Plans for Chicago's 100th birthday are well under way, as the '05 Notes will testify. Moving platforms on the tops of buildings to ease the lot of weary sightseers and gondolas to give atmosphere are among the mechanical devices to be used — Mushing is a sport recently taken up by a member of the Class of '06. — The Assistant Secretary of '12 has found his title a heavy burden judging from the wealth of sarcasm he uses in his notes. There is a suspicion of hokum in it, however, that convinces the reader that it is only Frederick Shepard's temporary absence for a trip to California that is making him so bitter.

The Class of '15 Notes are full of interesting news this month. A

great many men are represented in the news, and a lucid account of the growth of the telephone system in Spain is particularly interesting. — The Class of '22, our gold star black sheep of the year, has at last returned to the fold, only to be lost again. Eric Hodgins presents his resignation with gestures of regret and a flourish of news. The worthy President of the Class of '22 will need to ponder long and well before he chooses a successor whose verbal grace approaches that of the present incumbent. A year's supply of material fills this column with news that has long been looked for and will now be eagerly read. Complacently *The Review* Editors view the efficiency of their follow-up system, yet regret to lose this septennial Secretary. — The '23 Notes contain an account of the hospitality offered to Professor Spofford in Porto Rico by several of his former students. The program prepared for him was a heavy one and included visits to the various points of interest, such as Morro Castle and the University of Porto Rico. Banquets, inspection trips, and lectures completed this personally conducted welcome.

The tire selling industry in Cuba seems to have been shamefully neglected up to the time when a '25 man took it in charge. Have you ever wondered why the windows of local trains can never be raised? Another '25 man claims to have solved the mystery without stating whether he can raise them after the solution or not. — A feminine construction engineer gives an account of herself in the '26 Notes. Imagine the chagrin of any general contractor to find a "lady engineer" on his payroll! — The quiet home life of Honduras is the theme of the '27 Notes. Melodrama in the form of little revolutions served with machetes and ten-inch knives is the order of the day. The writer claims that it is a great country, however, for "you can't shoot Boston taxi-drivers," but Honduras is far more lenient. Such solutions of social questions make life more amusing for one lately out of



Technology. — The attitude of those even more recently graduated towards marriage shows an apologetic shyness. The Class of '28 offers explanations: "I am not married yet"; "Still sober and single"; "Basilio is going to be a whatnot if he's not careful"; and so on. Time may show an important change along this line.

Just when the Secretaries seemed ready to establish a record for participation in the News from the Classes section, they all collapsed together. Five Classes are lost or strayed from the fold. Some consolation is found in the fact that these Classes have not long been missing from this section. The April issue contained notes from the Classes of '10, '13 and '20, while the March issue held the notes from '98 and '21. News for the Class of '98 should be sent to Arthur A. Blanchard at Room 4-160, M. I. T., Cambridge, Mass. Dudley Clapp of 16 Martin Street,

Cambridge, Mass., is the Secretary of the Class of '10. George P. Capen, the Secretary of the Class of '13, lives at 50 Beaumont Street, Canton, Mass. The Secretary of the Class of '20 is Harold Bugbee who lives at 9 Chandler Road, West Medford, Mass. Any news for the Class of '21 should be sent to Raymond A. St. Laurent at 225 Cleveland Avenue, Whiting, Ind., or to Carole A. Clarke at the Victor Talking Machine Company at Camden, N. J.

The birth rate for this month shows a slight increase in favor of boys. Of a total of eight births, six are boys and two are girls. One birth is credited to the Classes of '06, '09, '12, '14, '18, '22, '24, and '25.

### Deaths

FURTHER mention of the following men, recently deceased, may be found in the notes of their respective classes:

**'68** From February 19 to 28, I went to Florida for a brief visit with Ned Rollins '71 and Alexander Durward. We saw the orange trees everywhere in full bearing, and the roses, hibiscus, and Cuban lilies, with many other flowering plants. We visited Rollins College at Winter Park, attended the various exercises of their Founder's Week, and enjoyed the hospitality of Dr. and Mrs. Holt. The College conferred on Ned Rollins the degree of LL.D.

One of the most interesting of the exercises, and one that is really wonderful and unique, was the animated magazine, in which the magazine writers, instead of writing out their articles and having them printed in magazine form, appeared and presented their articles in person to a large and interested audience. And Ned Rollins gave a fine large gift to the College. The Pageant of the History of Florida was very bright and well done, out of doors among the palm trees.

I also had the very great pleasure of meeting Professor J. Malcolm Forbes and Mrs. Howland (Alice Forbes), the children of my classmate, J. Malcolm Forbes. Professor Forbes is occupying an important place in Rollins College. — ROBERT H. RICHARDS, *Secretary*, 32 Eliot Street; Jamaica Plain, Mass.

**'74** Russ has made a visit of three months to Honolulu, from which place he wrote under date of February 20. He says the climate there has been perfect. The temperature is never over 78° or lower than 62°. Grass is always green, with a gorgeous display of palms and flowers everywhere. There are no flies, no mosquitoes, no snakes, and no pests of any kind. There is

no mud nor dust on the ground, and no humidity in the air above. It is truly the "Paradise of the Pacific." He met classmate Emerson, whose home is in Honolulu, and found him well and active, even though eighty-five years of age. Emerson's father, John S. Emerson, a minister, went to Honolulu in 1832 with the Fifth Company of Missionaries, and labored there thirty-five years. Oliver Emerson, Joseph's son, is a professor in the University of California.

Holbrook wrote from Lakeland, Fla., on March 8. He and his wife had been sojourning there for eight months. Later they will go to Chicago and then to the Pacific Coast to visit their children. — CHARLES F. READ, *Secretary*, Old State House, Boston, Mass. GEORGE H. BARBUS, *Secretary pro tem*, 12 Pemberton Square, Boston, Mass.

**'81** About February 1, I received a note from Charles Garrison '91 stating that he had met Joseph E. Smith out in California. I, therefore, wrote Mr. Smith and have a very interesting letter from him as follows: "It was at Barstow, Calif., on the west side of the Mojave Desert that we met Charles Garrison and his good wife. We were all on our way home, going east, — they to Cambridge, Mass., and my wife and I to Socorro, N. M. We were taking a noon rest. This accidental meeting was a great pleasure.

"The writer has made his home in New Mexico since the winter of 1882-83, and has seen and passed through many interesting experiences, especially in the early eighties and nineties. Our old home, 'The Torrior' is here at Socorro, N. M. [Park Street] where we spend most of our

JOHN B. BLOOD '90. Died on February 28, 1929. Went into business in New York after he had been valuation examiner in the Interstate Commerce Commission in Washington.

EDWARD B. WAITE '94. Died on November 3, 1928. Had been in poor health for several years before his death in Westboro, Mass.

HERBERT F. DWYER '99. Died on January 24, 1929, at Brighton, Mass. Was a customs inspector at the Boston Custom House for twenty years after some service in the Department of Justice, specializing in the investigation of naturalization frauds.

JAMES W. HUSSEY '00. Died on April 21, 1929. Was lost from a vessel, further details to be given later. Was formerly a naval architect with the Greenport Basin and Construction Company in Greenport, N. Y.

time, although we drive over to California frequently for a month or two with our children. We have a married son in Los Angeles, one in Corona, and a married daughter in San Diego. Our daughter is living in our California home, 4751 Marlborough Drive, San Diego, which we built in 1909 and where we make headquarters usually when in California.

"I am not in active business, simply do a little directing now and then and pretend. I'm getting too old; the days are moving too fast for me nowadays. If you ever drive through to the Pacific Coast and should take U. S. Number 85 Highway, you will pass by our house. We are at the crossroads of Number 70 and Number 85 Ocean to Ocean Highway going west from Socorro and Borderland going south and west (the Winter Highway). Our old home is called by the Mexicans 'The Torrior.' You will have no trouble in locating the corner of Park Street and McCretcheon Avenue. We live now in my mother's old home next adjoining north on the other corner of the block, corner Park Street and Church Avenue."

Your Secretary had the honor of an editorial in the "Mailbag" of the Boston Herald, March 12, which will undoubtedly bring reminiscences to many of our Class, as well as other participants in the Technology Reunion of 1904. It is as follows: "The editorial in today's Herald on 'Richard Hovey' brings to every one's mind the Stein song. It was in the winter of 1896-97 that I was calling one night on Dr. Galloupe when Steve Townsend rushed in with the announcement that he had got a new song which he thought was awfully good, and sang it two or three times for our edification. The words

were by Hovey, the music by Fred F. Bullard, '87. In the slang of today it was a 'knockout,' and it has proved to be such for a period almost covering thirty years.

"I remember at the Technology reunion in June, 1904, that Fred Bullard crawled out of a sick bed to conduct the orchestration and community singing of this song, and as it was being sung rather slowly (according to his idea) he stopped it and yelled out, 'Boys, this is no dirge.'" — Harry Cutler spent the winter at his home in Miami, Fla. — FRANK H. BRIGGS, *Secretary*, 390 Commonwealth Avenue, Boston, Mass.

'82 In the sudden passing, on February 2, of our beloved classmate, Jimmy Munroe, the ties of class friendship have been sadly severed. That he was "the Institute's foremost Alumnus," as declared by Dr. Tyler in his admirable appreciation in the last issue of *The Review*, was but a recognition of his versatility and the breadth of his interests. Their development is displayed in what he characterized as a "humdrum chronicle" furnished to the *Secretary* in 1896, as follows:

"Almost immediately after graduation I went out to Denver to take a position as assistant assayer with the Colorado Smelting Company, but while the Treasurer here had hired me, the manager there had engaged another fellow. So I got left. (Here let me ponder upon the awful possibility that if that other fellow — who, by the way, came on to the Institute a few years later to take a special course in assaying 'because he didn't know enough' — had been I, I might now be howling for '16 to 1'.)"

"The next day I was offered a place as draughtsman with the Denver and Rio Grande, but, fortunately for the road, refused it. From Denver I went to the Calumet and Hecla mines to visit Charley French who was doing some work for Professor Richards; and while there I received an offer to go into the *Secretary's* office at M. I. T. as assistant to Professor Richards. I began work there (salary \$800) in August, 1882, and remained with a raise every year till November, 1889, the first year as assistant, the second as registrar, and the rest of the time as *Secretary* of the Faculty.

"In the fall of 1889 my eldest brother died; and as some one was needed in his place and as the prospects of promotion (there being nothing to 'promote' to) at M. I. T. were blank, I resigned the secretaryship and was taken into the firm of Jas. S. Munroe and Company, where I have remained. My experiences have not been startling or greatly varied — seven years of extremely hard work and of delightful companionship at the Institute — with an insight into human nature and an experience in handling people and in organization that have been invaluable; and seven years of easier work, but of scarcely less valuable experience, in manufacturing and business. The only breaks, except for an occasional week or two in summer and short business trips,

have been three weeks in England in the summer of 1884 and five weeks in Germany and Belgium in 1885.

"In the fall of 1884 I became engaged to, and in July of 1885, married Miss Katharine W. Langdon of Boston. Until April, 1887, we boarded on Mt. Vernon Street in Boston, and for two years thereafter kept house at 10 Batavia Street. There our first child was born; but she died in the August following her birth, at College Hill where we were spending the summer. In April, 1889, we removed to Lexington, where we still reside. Our second child was born in 1891.

"My prospects seem to be to keep on in the same unexciting and moderately lucrative path that I am now following. I have had no political office and, being a 'mugwump' in a strongly Republican town, I am not likely to hold any. I was secretary of the school committee in Lexington for three years and, *ex officio*, one of the library trustees. I am corresponding secretary of the Lexington Historical Society and clerk of the parish committee of the First Parish Church. I was one of the founders and for a year or two a director of the Old Belfrey Club and was (I believe) secretary for several years of the Lexington Tariff Reform Club. I am a member of the Massachusetts Reform Club, the American Economic Association, the American Statistical Association, the National Educational Association, and the Society of Arts, and a resident (professional) member of the Cambridge Conferences. I belong to no clubs except the Technology and the Old Belfrey. For one year (1889 or 1890) I was Editor of *The Technology Quarterly*, and at present am the President of the M. I. T. Alumni Association and of the Technology Club.

"While Secretary of the Institute I published one or two articles in *The Technology Quarterly* and one on education in the *New Princeton Review*. I contributed also to the *Boston Post* under the heading of 'Scientific Note and Comment.' After leaving the Institute I had, comparatively, more time for study and contributed an article to the *Educational Review*, a 'note' to the *Pedagogical Seminary*, and published or delivered several minor papers, historical and educational. In 1895 I published 'The Educational Ideal' upon which I had been working for several years and which is now in its second edition, and I am hoping to get out another book in a year or two. I have delivered lectures before several clubs and organizations and hope to do more of that work in the future." — WALTER B. SNOW, *Secretary*, Box 652, Falmouth, Mass.

'84 The *Secretary* has nearly finished a booklet giving the changes since the class book was issued twenty years ago. Summarizing the results, we find that about 40 per cent of the Class are dead, 10 are retired, and 5 cannot be located. The remaining 45 per cent are very active. Apropos of retiring, one writes: "Retirement tends to inactivity, inactivity to atrophy, and atrophy to death."

Boardman has left the drudgery of the print works and is in real estate. His address is 448 Friendship Street, Providence, R. I. The Class will learn with regret of the death of his wife. — Bartlett writes from "somewhere in France" that he has retired as a lawyer and is visiting there. His address is in care of the Arlington Club, Portland, Ore. — Bunce has also retired, and during the summers may be found at his home at 525 Flax Hill Road, South Norwalk, Conn., where he will be glad to meet old friends. His winters are usually spent in southern California.

We note with regret the resignation of du Pont from the National Senate. — Fitch is in miscellaneous engineering and editorial work with the Ashton Valve Company of Cambridge. — C. S. Robinson writes that his youngest daughter married Millar Brainard, a Vice-President of the First National Bank of Boston, and that he hopes to be a more frequent visitor than formerly on his way to the summer home at Marion. — Theodore W. Robinson has been appointed to the Charles G. Dawes Commission to investigate and report the fiscal affairs of the Dominican Republic. — AUGUSTUS H. GILL, *Secretary*, Room 4-047, M. I. T., Cambridge, Mass.

'86 At the last annual meeting of the American Society of Civil Engineers the Society conferred its highest honor, that of honorary membership, on J. Waldo Smith. Clemens Herschel, who made the introductory address, referred to the happy coincidence that, six years before, Smith gave the introductory address when the Society conferred honorary membership on Mr. Herschel. Besides Smith, five engineers living in foreign countries and ten American engineers are honorary members of the Society. One of the latter now holds the highest honor in the gift of the American people, that of President of the United States. — ARTHUR G. ROBBINS, *Secretary*, Room 1-270, M. I. T., Cambridge, Mass.

'88 Your *Secretary* is pleased to report that Dr. Edwin O. Jordan, Professor of Bacteriology and Chairman of the Department of Hygiene and Bacteriology at the University of Chicago, has been appointed Cutter Lecturer on Preventive Medicine at Harvard University for the year of 1929.

Members are urged to send in to the *Secretary* items relating to their own doings or those of their classmates. — WILLIAM G. SNOW, *Secretary*, 38 Chauncy Street, Boston, Mass.

'90 Your *Secretary*, with Mrs. Gilmore, arrived in Honolulu on February 1 for a month's visit after a pleasant passage over. They had a delightful time in Honolulu, with drives, golf, and bathing. On Saturday night, February 16, the Technology Club of Hawaii gave a delightful Hawaiian dinner to the visiting Technology men at the Pacific Club. Seventeen were



1890 Continued

present. The guests were Rollins '78, Gilmore '90, Dillon '93, Payne '05, and Colonel Phisterer. All of the guests were called upon for a few remarks and to report what is doing at Technology. Hussey '87, Boss '94, and Irving '00 had been in Honolulu but left on February 9. Payne '05 with Mrs. Payne left on February 21 on a business trip to Japan.

Your Secretary left Honolulu on March 1 for San Francisco and after a few days there went to the El Encanto at Santa Barbara to remain until the last of April. While in Los Angeles he called on our classmate, Burdett Moody. Burdett is business manager of the Los Angeles Light and Power Company. At present he is busy with the problems in connection with the Boulder Dam proposition that has caused so much talk in Congress.

Dr. George Hale, with Mrs. Hale, spent part of February at Algeciras, Spain. From there they went to Algiers, Tunis, Italian ports, and Egypt. The Corporal is just having a lazy time for a change and not star gazing. — George A. Packard left on January 15 for an examination trip to Arizona, which was followed by mine examination work in Nevada and elsewhere. — We were interested to learn that Charles Neave was one of the speakers with Charles Evans Hughes and Federal Judge Learned Hand at the annual dinner of the Patent Law Association on February 14.

The following item was sent to your Secretary: "In the fall of 1926, W. B. Poland, American Engineer, was invited by the Persian Government to come to Persia on a contract of two years as Director of Railways to take charge of the location and construction of the proposed National Railway, between the Caspian Sea and the Persian Gulf. In December Mr. Poland arrived and the surveys were started. C. J. Carroll, chief engineer of surveys, and eight other American engineers, assistants to Mr. Poland, arrived in March, 1927. This small personnel, assisted by a few Russian and Persian engineers determined the location between the Caspian Sea and the Persian Gulf, a distance of 1685 kilometers, and made the preliminary studies for the location of the terminal harbors at Astrabad Bay on the Caspian Sea, and at Khor Musa on the Persian Gulf. One hundred and fifty kilometers of the grade was completed.

"On the expiration of their two year contracts, Mr. Poland and the other American engineers withdrew. The completion of the detailed location and the construction has been turned over by the Government to a German-American syndicate which includes, for the Germans, Berger, Holzman and Siemens Bau Union; and for the American group, the Ulen Company and the G. J. White Company. The syndicate is now going ahead with construction. Mr. Carroll has been retained by the Government in its Inspection and Control Bureau. Shortly after leaving the Persian Service, Mr. Poland was appointed by the Chinese Government as a member of the Financial Commission under Dr. Kammerer to draw up

a new system of finance for the Chinese Empire. His position is that of Expert on Railway Finance. The Kammerer Commission sailed from San Francisco for Shanghai, China, on January 18."

We regret to announce the death of our classmate, John Balch Blood, on February 28 at the Post Graduate Hospital in New York. John served as a lieutenant in the navy during the war. Following that he was in government service in Washington. For the past three or four years he was in business in New York. — GEORGE L. GILMORE, Secretary, 57 Hancock Street, Lexington, Mass.

**'92** The only news for the '92 Notes this month is a clipping from the Boston *Globe* dated March 13. A sketch of the new building which is to be the memorial to J. Randolph Coolidge and the home of the Sandwich Home Industries of Sandwich, N. H., goes with the clipping, and is the work of Harry J. Carlson. "J. Randolph Coolidge, late of Boston, but for many years an honored resident and benefactor of this picturesque town among the foothills of the White Mountains, is about to be still further honored here by the erection of a building to his memory. This building was for more than two years before his death his dream of another benefaction for the town he loved so well.

"The Coolidge Memorial will house the Sandwich Home Industries, which Mr. and Mrs. Coolidge with the cooperation of the townspeople started as an experiment for the benefit of home workers. The enterprise, because of the devotion bestowed upon it by the Coolidges and their co-workers, prospered from the start beyond the hopes of its founders.

"The attractive design for the memorial building is the work and gift of Harry J. Carlson of Boston, for many years Mr. Coolidge's partner in the architectural firm of Coolidge and Carlson. As designed, the building will assure the community producers suitable facilities for the display and sale of products of farm and fireside. It will be in every way a community building.

"Mr. Coolidge in his lifetime gave the town his professional talent freely in the working out of the designs for the Public Library and the Town Hall. He also made liberal contributions of money as well as of his architectural skill in the rebuilding of the village church. In various minor ways Mr. Coolidge showed his deep interest in the town. The town reciprocated in sending him as Representative to the 1925 Legislature." — JOHN W. HALL, Secretary, 8 Hillside Street, Roxbury, Mass.

**'94** This being a reunion year, the Secretary desires to announce through this column the plan for the Reunion as it now seems to be taking shape. Having secured the general approval of a number of the Class that a reunion of the same type as that held five years ago and in the same general region would be most acceptable, plans are formulating to repeat the program, with such modifications as may be found de-

sirable. The main part of the Reunion will be at East Bay Lodge, Osterville, on Cape Cod, the week-end of June 21-24. The hotel has kindly offered to reserve this period for us. The week-ends previous have been taken up by other reunion classes which will hold their celebrations in the same place. It will be recalled that there are golf courses in the immediate neighborhood, that there are tennis courts on the hotel property, and opportunity for all forms of sport in which youngsters only thirty-five years out of college are likely to enjoy. The tentative program is as follows: Friday, June 21, luncheon at M. I. T. or some Boston club; Friday afternoon, motor to Osterville, arriving there in time for dinner; evening, general reunion, bridge, and so on; Saturday, beginning of the class golf tournament, baseball, swimming, motoring, and a general good time; Saturday evening, class dinner and election of officers; Sunday, program adapted to fit various groups and individuals present. It is possible that some may feel that it is necessary to return to Boston or elsewhere on that day. For those who can remain longer the opportunity to do so is available. No definite program has been laid out for Sunday evening or for Monday as the experience of the past two reunions indicates that the exodus will become fairly considerable on Sunday night.

Prizes will be offered for the winners of the class golf tournament. A prize will also be offered for the member coming from the farthest distance. It is hoped that all members of the Class who read this notice will make a special effort to reserve this week-end and attend the Reunion. A class notice will go out from the Secretary to all members within a few days. At our reunion five years ago there was a total attendance of about sixty members and this year we hope to exceed this number or at least to have as many. This can be done if plans to attend begin to be laid at this time.

The Secretary received too late for notice in the last Class Notes a copy of a very interesting paper dealing with the question of flood control by J. H. Kimball, assistant engineer with Metcalf and Eddy in Boston. Kimball was formerly assistant chief engineer of the Miami Conservancy District in Ohio and it was under his direction that many of the studies on flood control were made and much of the engineering development connected therewith was of his design. This paper assumes immediate interest in view of the flood situation which has created so much havoc during the past weeks in Alabama, Georgia, and Florida. It is evident that flood control engineering is an important branch of civil engineering and it also has an important bearing on public health, since epidemics are so likely to follow due to the pollution of water supplies and wells by the impure and sewage-laden waters of the stream and flood. Kimball is a recognized expert in this branch of sanitary engineering.

F. M. Leonard is now associated with the State Highway Commission with headquarters at Augusta, Maine. Whether

Leonard's position is to any degree imperilled by the recent difficulty which seems to have risen between the federal government and the highway commissioners of Maine has not yet appeared, but we hope that he will be very successful in this new position to which he has recently gone from Massachusetts.

It is with very great regret that the Secretary has to record the death of another of our members — E. B. Waite, who has for several years been in rather poor health, died at his home in Westboro, Mass., on November 3, 1928. No particulars have been received by the Secretary, and it was only recently that the information was brought to his attention. Waite was at one time connected with the International Correspondence School, but for several years past has made his home in Westboro where he has done a certain amount of consulting engineering. Those who recall him will remember a quiet, almost shy individual, of studious nature and with a very pleasing personality when once the barriers of reserve were broken down. The sympathy of the whole Class will go to his family.

A note in *Science* states that on February 8 Dr. Charles Greeley Abbot, Secretary of the Smithsonian Institution, was elected a member of the Research Corporation of New York to succeed the late Dr. Walcott. The mail has recently brought reports from the Smithsonian Institution dealing with some of the work of Abbot and of Fowle. The paper by Fowle is on "Atmospheric Ozone — Its Relation to Some Solar and Terrestrial Phenomena."

The Institute was visited on March 20 by Arthur Patrick who came on to search for some executives for a business in which he is interested. Phelan and the Secretary had the pleasure of meeting him at luncheon. Patrick's son, who was graduated from the Institute last year, is now doing excellently in a position in Cleveland. Patrick has a daughter who is a member of the senior class at Wheaton and another who is an undergraduate at Skidmore. It was very interesting to compare notes on the various methods employed by the young people of today in educating their fathers, as well as to compare the methods of the fathers in educating their children. — SAMUEL C. PRESCOTT, Secretary, Room 10-405, M. I. T., Cambridge, Mass.

**'95** The Thirty-Fifth Reunion of the Class should be scheduled some time during the coming year 1930. It has been customary in past years to hold a general reunion every five years so that men living some distance from Boston can plan to attend and renew old friendships. The practice has been to hold such a reunion in New England because the greatest number of '95 men are located in New England and near-by states. In order to have everyone share with your officers the responsibility of selecting a satisfactory place to hold this reunion, your Secretary earnestly requests your personal views on the subject. To prepare properly for such a reunion re-

quires considerable time and thought, and the individual expression and cooperation of every '95 man is necessary to make the event a success. You will hear from your officers in time, but in the interim let us have your suggestions.

The '95 New York Club held their class reunion at the Railroad Club at 30 Church Street, New York City on Thursday, February 21. Brackett, Donham, Gardner, Hannah, Moore, Swope, and Wolfe attended. As usual Johnny Moore expounded the virtues of Al Smith and the errors of the Democratic Party, especially with reference to the presidential campaign last fall. — Gerard Matthes wrote that he is engaged on river studies in Virginia for the War Department during the next six months or more. — Crane spent the month of February in Florida. — Draper is in Australia for at least a year. — Dave Weston is in Venezuela.

The Class of '95 was well represented at the Boston Chamber of Commerce luncheon where Alfred P. Sloan, Jr., President of the General Motors Corporation spoke on "Business Prosperity and the Automobile Industry." Hundreds were turned away, but the following men, under the leadership of Frank Bourne, managed to get together at the same table without committing murder: Booth, Bourne, Gus Clapp, George Cutter, Walter A. Hall, Hurd, Win Parker, Ed Tucker, Walter S. Williams, and Yoder. — LUTHER K. YODER, Secretary, Chandler Machine Company, Ayer, Mass.

**'96** Our first item will deal with travel reports. Gene Hultman is back at his desk as Fire Commissioner of Boston, after his four weeks of vacation trip with Mrs. Hultman. They were at Sea Island, only about ten miles from the Dixie Highway with excellent roads. Actually, Sea Island is off the coast from Brunswick, Ga., and about halfway between Savannah and Jacksonville. He reports a delightful time with weather like June in New England, and only one day of rain during his entire stay. This enabled him to play golf almost continually, with the result that his game must have materially improved, although he will not actually acknowledge it. Probably he has a subtle reason for disclaiming any improvement, which is that he wants to take on some of the boys around Boston this summer without letting them know that he is in better form than in the past. He recommends the hotel at Sea Island Beach as most excellent, the only trouble being the temptation to eat too much. In addition to golf there was some motor-boating and more or less automobiling.

Johnny Hallaran likewise made a trip south during March and was for a while at Greensboro, N. C., but planned to continue to Florida before finally returning home to Toledo. He, too, was most enthusiastic over the South during the month of March, and recommended Greensboro as a splendid place for a class reunion, except for its distance from New

York and New England. — Mark Allen sent postcards to the Secretaries from Bombay, India, which place he and Anderson had reached on their tour around the world. — Arthur Baldwin has reported his safe return to Paris after his brief American trip. He is going to get in touch with Reg Norris and extract some information from him over the luncheon table and will pass this along.

Charlie Hyde so far has failed to come through with any report of his European trip, and likewise Myron Fuller has not supplied a complete account of his latest travel tour. However, both of these men can be counted on to give us excellent travelogues later. — The annual call of the fish takes Rockwell to Hurd's camp on Chesapeake Bay for their regular old time gathering and fishing bout. This is Rockwell's yearly relaxation and helps to recuperate him from the long, hard grind of a general practitioner's winter.

Classmates may have noticed in the March issue of *The Review* that Jim Haste had provided in his will for a fund of \$100,000 for Technology scholarships, with the further provision that one-half of the final residue of his estate should come to Technology. — Another general item which will be of interest to the Class is that of the nomination of Paul Litchfield for the Presidency of the Alumni Association, which is equivalent to election. — Perl Underhill is getting in line for the grandfather class, having taken the first step by announcing the engagement of his daughter, Ruth, to Edward F. Bowditch '22, son of Mrs. Frederick C. Bowditch of Brookline. A small tea was given at the Underhill home on March 1 for the announcement of the engagement. — Further reports from John Lonngren in Los Angeles indicate that his steel and wire project is continuing to progress satisfactorily. He has associated with him financially Emerson Spear '22, and he has already received a definite order for 300 tons of wire to be delivered just as soon as the plant is in operation.

Mort Priest further favored the Secretary by sending newspaper clippings covering the presentation of the Hearst Medal of the Student Rifle Team of Technology, as was stated last month. — Charlie Trout reports that his firm has been reorganized into two separate firms. Trout himself will continue with Henry Steers, Inc., at the old address, 17 Battery Place, New York, in the business of supplying sand and gravel. Trout forms the real worker of the organization, holding the office of Secretary and General Manager. — George Hewins as construction manager of the New England Power Construction Company is a busy boy this spring, with all of the new jobs that his company has on hand. In addition to this, he has recently broken ground for a new home to be built in Wellesley Hills, which he hopes to occupy by September 1. This will mean that George will be located nearer to Boston than he was at his former residence in Worcester, and thus we will have a better chance of seeing more of him.



1896 Continued

Woodwell came on from New York to attend the celebration of his grandmother's 104th birthday in Newburyport on March 15. He tried to get a little time in Boston but was unable to accomplish this so the Secretaries did not see him in person. However, a congratulatory message was sent in the name of the Class to Mrs. D. T. Woodwell in Newburyport, addressing it to the illustrious grandmother of an illustrious member of the Class of '96, and expressing best wishes for her continued health and enjoyment. Woodwell has secured the contract for the building of the last half of the Municipal Power Plant in Lansing, Mich., ranging in cost from a million and one-half to two million dollars. It will be recalled that he built the first half of this plant. Woodwell is very much interested also in airplanes and airplane travel.

Mort Tuttle's Company has completed the \$2,000,000 gypsum plant on the Mystic River in Charlestown, and turned it over to the U. S. Gypsum Company. This job included not only the construction of the buildings but also the supervision of the installation of machinery, some of which is very large and heavy. — Professor Waterhouse, on a recent journey to Detroit, had the company of Ralph Henry both ways. The latter is the supervising architect for the Yacht Club building at Point Gratiot, above Detroit.

There doesn't seem to be any special news from the fellows around Boston. Rockwell lunched with Sam Wise one day at the University Club, but Sam couldn't supply any news items of interest. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

**'99** The Class of '99 will hold a successful Reunion at the Hotel Griswold in New London, Conn., on June 14, 15, and 16. Sixty acceptances are already at hand, they arrive in every mail. When a group of '99 men, sixty strong, gets together the occasion cannot be otherwise than successful.

Tommy Lennan informs me that he and Norman Rood met at the Commodore Hotel in New York in February and made plans for attending the Reunion. They are polishing their golf clubs and hereby serve notice on all the boys that they will take on any pair in a best ball foursome. Tommy does not say so specifically, but I assume that he made a special trip to New York to settle these plans. It must be a fact as he did not have time to look me up at the Institute meetings. There should be plenty of takers for the challenge.

Frederick Watkins of Chicago writes urgently for dope on the Reunion as he may drive down and bring Frank Huse with him. — D. C. Churchill of Berea, Ky., found the notices of the Reunion plans on his return from a trip to the West Coast, and has written that he is getting excited about the Reunion and is planning to come and bring his wife. — J. C. Dryer got into the airplane business last autumn

and is now Vice-President of the Cunningham-Hall Aircraft Corporation, a new company that has just been organized in Rochester, N. Y. Dryer has been discussing plans with classmates, and several of them are planning to attend the Reunion. — From Miles Sherrill I learn that Ben Hazeltine is now with the Bethlehem Steel Company at Sparrows Point. He lives at 5 B, Tudor Apartments, Baltimore, Md. Sherrill modestly admits that he stole off to Florida for about three weeks after Christmas to work with Dr. Noyes on a revision of their textbook, and he presumes that even Willy Nathan would admit that for any one to work in Florida is a real news item.

It was Nathan's suggestion that we all go out and bite a dog at our Thirtieth Reunion and thus get on the front page of every newspaper in the Universe. We appealed for a dog. The dog is no longer wanted. Some kindly disposed person upset our plans by sending in the following clipping from a newspaper in Fort Mill, S.C.: "Chief of Police Potts hearing a commotion and the howling of dogs in the lower part of the city, investigated. . . . A man staggered around the corner. . . . Chief Potts noticed that his mouth was full of hair . . . the howling had annoyed the man . . . he had caught one of the canines, and had bitten it three times. The Chief of Police vouches for the story." On March 23 another clipping was received from a Denver paper: "Dog flees in terror as girl's friend turns tables and bites ear. Man bites dog. A big police dog attacked girl . . . her companion bit the dog's ear. . . . The dog fled ignominiously." It would be old stuff to bite dogs in June when others had bitten them in March.

Members who have changed their addresses will please notify the Secretary's office, so that the mailing list can be corrected, and final notices of reunion plans will not go astray or be returned.

C. A. Watrous of Des Moines, Iowa, writes me that he did a good deed for the Class last June. While calling on Harry White in New York he happened to mention that he had been calling on Clifford Swan. Harry said he knew an acoustical engineer by the name of Swan. "Is that all you know about him?" asked Watrous. "I've done business with him," remarked Harry. "You big stiff," replied Watrous, "you graduated with him." Thereupon Watrous went back to Swan's office and mentioned White. Clifford Swan had heard of White. He had even done business with him. Watrous commented pithily, but the best rules of rhetoric frown on repetition, and the comment will not be repeated. "It is fine stuff," says Watrous, "when a member of the Class from the corn belt has to inform two other members of the Class with offices two blocks apart and doing business with each other, that they graduated in the same Class."

James B. Ellery writes that he is still at it for Single Tax. On March 15 he lectured on "Heat" to a group of boys at the Y. M. C. A. — On March 27 at a meeting of Massachusetts Public School Principals

at Amherst College, Rose Carrigan gave an address which dealt with the three phrases of "Education for Citizenship through Character Development," as conducted at the Shurtleff School in South Boston.

It has just come to the notice of the officers of the Class of '99 that Herbert F. Dwyer died on January 24, 1929, at Brighton, Mass. Dwyer was a popular Customs Inspector for over twenty years on the staff at the Boston Custom House. Prior to entering the Customs service, Dwyer was attached to the Department of Justice, specializing in investigation of naturalization frauds. — W. M. CORSE, *Secretary*, 810 18th Street, Washington, D. C. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston, Mass.

**'00** A letter from Westcoat arrived a few days ago lamenting the fact that there was not more news of the other fellows in the Class from time to time. He writes of having met Jim Batcheller at Mattapoisett last summer and of the fine chat he had with him after a local Rotary Club meeting. Dick, in closing, sends his best to all and wants any one who is a little bit out of gear to drop in on him. His postscript did not get by the censor.

Changes of address have been received from Chalmers, Godfrey, H. E. Osgood, Borden, and Kattelle since the last issue. — This Class is entitled this year to elect a representative in the Alumni Council for five years, and Ingersoll Bowditch has consented to be a nominee to succeed himself. We are very fortunate in having Bowditch as a representative and it is interesting to note that up to date his percentage of attendance at Council Meeting is 94 per cent.

Notice has just been received of the death of James W. Hussey who was lost from a vessel on April 21, 1928. This news came from the executor of his estate, and he has been written to for details. When last we heard, Hussey was a naval architect with an address in Philadelphia.

There is something ahead of us in the shape of a monster reunion in June, 1930. Do not forget to lay your plans for it now. Thirty years out and going strong. The fortunate hundred who cavorted about at the Twenty-Fifth Reunion forms the nucleus of a grand gathering. Send in any suggestions. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

**'01** In the establishment of the Bronx River Parkway, which has involved the reclamation of a polluted stream bordered with ugly, unhealthy swamps and its transformation into a magnificent parkway, a great feat has been accomplished. To signalize this triumph of engineering skill, the Arts and Science Society has conferred awards on the eighteen men most concerned with the consummation of the project. Among them Arthur W. Hayden, who acted as designing engineer for the Commission until the end of 1925 when he was transferred to a similar position with the West

Chester County Park Commission, has received a bronze medal. Arthur had six years of service with the Commission, having been transferred to the state engineer's office in Albany where for a number of years he was employed on the barge canal.

From the Strawberry King I receive diverse glad tidings, among which is that of a possible visit to Boston in the not far distant future. He writes me that one of Lammot du Pont's companies is starting a wonderful rayon development near Charlottesville, Va., which is the present headquarters of friend Al. Lammot was here in Boston a few days ago to attend a meeting of the Corporation of Technology but I was not fortunate enough to see him. Both Lammot and Al have been unfailing in their support of the Class and its affairs, an example that could be emulated by others to the advantage of the aforesaid organization and its Secretary.

Turning now to weightier matters, I wish to place before the constituency the question of a Thirtieth Reunion. The Twenty-Fifth gathering was a success, the only regret deriving from the small attendance. At that, a goodly fraction of the Class registered but we hope to pass the hundred mark at the next Reunion. With thirty added years to those elapsing before we pass the Rubicon of graduation the majority of the Class are still young enough to maintain their addiction to outdoor sport. Those who prefer the complementary forms of diversion acquired their predilections many years ago and are doing no more than run true to form. The Madero brothers, exponents of the joys of domesticity, have not been heard from since one member of their family undertook the self-determination of the small republic. Those who have survived that tragic interval are, I believe, living in the United States, and I know that it is the sincere wish of every member of the Class that they reunite with us in 1931.

Indirectly I am advised that the great American traveler William, otherwise Bill, Le Bosquet plans to arrange his itinerary to include our meeting place on the date appointed. While his urge for movement is obviously a potent one, he hopes to stay long enough to offer Joe Evans a modest hospitality and then to partake of one meal with his classmates. Oklahoma, El Paso, Seattle, and Waukegan, Ill., all beckon with alluring fingers, but Bill's loyalty to the old Class insures his dedicating a few hours of his restless life to cementing those ties of friendship which were woven in the past. Should this lilting bit of poesy meet his eye I shall be very thankful, but I understand that the numbers of The Technology Review for the last eight years are pursuing him relentlessly in an effort to catch up, and that with the super-economy which is to characterize the administration of the ex-engineer who now presides over our destinies, the Post Office Department is trying to effect a compromise. The task is going to be well nigh hopeless.

It will greatly help your Secretary and his efficient Committee — efficient because not yet appointed — if you would write to him and indicate your preference as to the time and place of reunion. Personally, I think a quiet week spent in some sylvan shade with facilities for reasonable diversion might be a good idea. Matt Brush's suggestion of the corner of Broadway and 42d Street does not appeal to those more rurally inclined. It would almost be worth the price of admission, though, to see Ted Davis's corn-cob pipe gracing that intersection of two of America's leading thoroughfares. However, the inevitable interruption of traffic would make the episode of but brief duration, and judging from the failure of so many members of the Class to respond to my moving appeals, I doubt if those present would be able to raise enough to bail him out. The picture is a sad one, even though the humanitarian element introduced into New York's penal system by the late Mr. Osborne would probably allow Ted to continue the practice of his particular vice.

As a harbinger of spring you will all shortly receive a little questionnaire, that gadfly of the busy, inviting your suffrage on the Thirtieth Reunion. One thing I will guarantee and that is that no attempt will be made to get out a Thirty Year Book, showing us as we were and are. With too many, the lissome lines of youth have departed, followed or preceded by the cranial adornment. Boys we may be at heart, a few of us perhaps still in action, but in reality we shall have then passed that dividing line and repose placidly in sober, middle age.

Those of you whose sons are graduating this year from Technology or seemingly more frequently from some other alleged institution of higher learning, look up your Secretary in his hall bedroom commanding a spacious view of the Public Garden, to say nothing of the more private but equally absorbing vistas of the Ritz-Carlton. There will be a warm — or cold, this depends on the weather — welcome for you. And do write in your feelings about the Thirtieth Reunion. The time is imminent; it is scarcely more than two years away, and with the lethargy that distinguishes so many of you I shall probably get an expression of choice for the Thirtieth just prior to the Thirty-Fifth. Only George Anthony Hall that man of words as well as deeds, may be counted on for a prompt and prim expression of disapproval, not for any particular reason but just on general grounds. Consistency is a precious boon. — ALLAN W. ROWE, *Secretary*, 4 Newbury Street, Boston, Mass. V. FRANK HOLMES, *Assistant Secretary*, 250 Stuart Street, Boston, Mass.

'02 Elisha Walker has been elected President of the Bank of America. This financial house has been formed recently by the consolidation of the former Bank of America with Blair and Company, of which Walker was the head. — Harold Pope is back in New York, his address for the present

being the Engineers Club, 32 West 40th Street. — Charlie Stover, who is President of the What Cheer and Hope Mutual Fire Insurance Companies, Providence, reports having seen Freddie Allyn, Gilbert Townsend, and Aaron Schwartz when in Montreal on a recent business trip. Schwartz is engineer with the Power Corporation of Canada.

Les Millar was in Boston for a few days the last of March and attended the Alumni Council meeting on Monday, March 25. He addressed the meeting on the importance of keeping closer contact between the Institute and the Technology men at a distance. Les is looking much the same. He reports having seen Chalfoux when business took him to Birmingham recently.

We noted from a clipping in the Providence *Bulletin* that Royal Wales received the compliment of being voted the most popular professor in Rhode Island State College by the graduating class. — As we all know, by this time, Lou Cates was not appointed to the Cabinet in spite of the fact that he was strongly urged by many prominent men in the Mountain States. Classmates have also noted, however, that Cates was nominated for Term Membership on the Corporation for the second time. This copy of The Review will not be out in time to urge you to vote for him, but you have doubtless done so anyway.

This is the last copy of The Review which will be out before the class outing at the Riversea Inn, Saybrook, Conn., on June 14 to 16. Send word to the Secretary if you can take this in. — FREDERICK H. HUNTER, *Secretary*, Box 11, West Roxbury, Mass. BURTON G. PHILBRICK, *Assistant Secretary*, 246 Stuart Street, Boston, Mass.

'04 Dear Fellow-Fours: Having received no communications registering approval or complaint regarding my last letter to you, I shall venture to write you again. You have already had at least one notice regarding the celebration of the Twenty-Fifth Anniversary of our graduation from the Institute which will be held on June 6, 7, 8, and 9, and to the small and select circle which receives The Review this communication will serve as an additional reminder of that event.

The first event is a dinner and evening party at the BraeBurn Country Club, West Newton, on June 6. This will be in the nature of a general get-together meeting. Arrangements have been made whereby any one desiring to play golf on the famous BraeBurn course may do so on the afternoon of this day. Friday noon luncheon may be had by those so desiring it at the University Club, and during the afternoon the trip will be made to East Bay Lodge, Osterville, which will be the headquarters for the remainder of the anniversary. For Friday evening no set program has been worked out as yet, but it is anticipated that there will be plenty going on to occupy the time. Saturday will doubtless be devoted to golf by a great many of those present and arrange-



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ments have been made with the Oyster Harbor Club to play on the new eighteen hole course located there. Saturday afternoon the ladies will be entertained at tea and bridge at the Oyster Harbor Club. On Saturday evening we shall have our regular class meeting, followed by dancing. For Sunday there is no program outlined as it is felt that everyone can look out for themselves on that day, it being the breaking up day of the celebration. Perhaps this résumé will serve to further excite your interest in the anniversary, and if you have not already made up your mind to come, do so now.

At the Annual Alumni Dinner held on February 16 there were four members of our Class present, Reg Wentworth, Howard Moore, Cy Ferris, and the omnipresent H. Mathew Haley. Haley acted as Secretary *pro tem* and his report on the dinner is a gem of brevity, consisting of a copy of the menu with the names of the class members who were present. From the menu as given it must have been a good dinner.

On February 15 and again on March 22, small meetings were held at the University Club for the purpose of discussing plans for the Twenty-Fifth Anniversary. These meetings were each attended by about a dozen men and considerable benefit was obtained in more than one way from them. Mert Emerson attended the March 22 meeting and reported that he and Mrs. Emerson had spent the month of February in California having a very pleasant vacation, and that he saw several of our classmates while in that vicinity.

I am sure that I do not know where I would bring up in the matter of class news if it were not for Professor Charles E. Locke. There is hardly an issue that goes by but he sends in some very interesting bit of information regarding some member of the Class. Here is the latest one. "The astounding little bit of information has been received to the effect that that confirmed bachelor, Hubert Merryweather, was married in New York City on January 24, to Miss Alice Hall, daughter of Dr. Walter Henry Hall, who holds the chair of music at Columbia University. He and his bride sailed the same day for Havana. Merryweather is still connected with the Bethlehem Steel Company and is engaged in reorganization of the operations of the iron mines of that company in Cuba." I am sure that I am as much surprised as was Professor Locke to hear this news. It may be recalled that Merryweather was one of our long distance travelers attending the Reunion in 1916, and I hope that he and Mrs. Merryweather will again make the long journey and be present at our Twenty-Fifth.

The next bit of news to be recorded comes from Chicago. "Julius Lawrence Hecht has recently been elected a member of the Board of Directors of the Collegiate Club of Chicago. This club was organized to furnish a club home for the thousands of college men in Chicago and its vicinity. At present its membership of 2,000 contains representatives from practically every accredited school in the

United States. Plans are under way for the acquisition of a suitable downtown location on which to build an up to date club building, at which time the membership will be built up to 5,000. Mr. Hecht is Vice-President of the Public Service Company of Northern Illinois, a member of the large Insull chain of public utilities."

In the '05 Notes for the March issue of The Review was an item to the effect that it was thought the class grandchild had been born. This started a train of thought in my mind, and I have made an investigation which seems to indicate that, as naturally should be the fact, the Class of '04 has a grandchild which antedates the first grandchild of the Class of '05. Jack Draper became a grandfather on August 17, 1928. If any readers of this letter have grandchildren who were born previous to that date, please communicate with me at once in order that I may give proper recognition to the event.

About the middle of March, Bill Eager called to see me, and we spent a very pleasant half hour discussing old times and old friends. — I have not much more to put into this letter except to urge you all to attend the Twenty-Fifth Anniversary, and to bear in mind that the wives, sweethearts, and families are included in the invitation to this grand event. Not being in possession of a mailing list of The Review, I do not know exactly to whom this letter is addressed, but I assure you that I am looking forward to seeing you all at one of the events in June. — HENRY W. STEVENS, Secretary, 12 Garrison Street, Chestnut Hill, Mass. AMASA M. HOLCOMBE, Assistant Secretary, 3305 18th Street, N. W., Washington, D. C.

'05 Your Secretary has finally seen the new North Station, designed by Funk and Wilcox. George Funk, as you know, is '05 and we have just discovered that Frederick S. Wilcox is about one-third '05, for he is variously listed in our books of reference as '04, '05, and '06. As his picture is in our Senior Portfolio, he should be more than one-third ours. The station is an eye opener. It just isn't Boston. Enormous spaces, everything spotless. At the hour we were there, the great Boston Garden was not doing business, but a few days later Ed Poor's Hygrade Lamp Company sent us a picture of the interior filled with cheering thousands at a hockey game. Ed furnished all the lamps. Funk and Wilcox are not only architects but inventors and engineers, for they have basic patents on the system of imbedding brine pipes in the smooth terrazzo floor upon which the ice is frozen. The North Station, you see, was merely an incident in their design of the Ice Palace. They are said to have designed the new Madison Square Garden in New York, and are now drawing plans for an arena of about equal size for Hartford.

We have not visited Portland, Ore., yet but have heard from Morris Whitehouse, one of the few architects willing to report. He has done a lot of important work

around Salem and Portland, including country clubs, Y. M. C. A.'s, a civic stadium, churches, fraternity houses, and residences. His Beth Israel Synagogue, pictured in the March issue of *Architecture*, is unusual and very interesting. He writes: "The firm of Morris H. Whitehouse and Associates is now composed of A. Glenn Stanton '21, Walter E. Church '21, and myself, — a real Technology firm, you see. I have not been sent East since 1912, I'm very sorry to say, but hope to get back soon and say hello to the old gang. If any of them ever come West, I hope they will look me up and I will help them fight the 'Indians.'"

From Frank Carhart, in Boston: "I am still associated with Jackson and Moreland, as you know, now a member of the firm, and we have been doing very interesting work from an engineering point of view. Right at the moment we are consulting engineers for the Delaware, Lackawanna and Western Railroad on their electrification of the Hoboken Terminal and suburban lines. We were also consulting engineers for the Great Northern Railway on the electrification of the Cascade Division which included the new tunnel recently opened. Aside from this, we have been doing quite a good deal of rate and appraisal work during the past two years. I see some of the '05 men regularly, particularly John Damon who is associated with us here, and Fred Abbott. I also see Bob Folsom and Frank Elliott occasionally. Bob now has his office in Boston, over in the Consolidated Gas Company Building. On my last trip to New York I dropped in to see if, by some chance, Hallett Robbins was in New York, and found, much to my surprise, that he was no longer with the American Cyanamid Company. I did not learn what his present connections are."

The Institute swimming team defeated Wesleyan here on March 9, and at least one New England record was broken. Afterwards, according to ancient custom, the team gave a yell. It was "We are happy" which some of us thought *de trop* at Cambridge. When the Fives and Wives tried it in Walker in 1923, the students looked as though they thought us strange animals. A Technology boy with whom we conferred said it was the only yell they used, — "Except one that is worse." We feel relieved. — In the March notes, Bill Spalding told of hearing Dick Marsh's stories of the White Indians of Panama. A February dispatch from Balboa, C. Z., reported a rebellious movement of the San Blas Indians, "who have been peaceful since they were instigated a few years ago by Richard O. March to proclaim themselves independent as the Tule Republic."

Ball, Barrier, Buff, Carhart, Crowell, Damon, Danforth, Fuller, Guibord, and Wentworth attended the Annual Alumni Dinner on February 16. The opinion seemed to be that it was a dignified party with good speeches. Crowell and Fuller thought that your Secretary should have sent out special invitations or personal appeals to attract more of a crowd. Fuller thought so hard that he wrote us a letter,

1905 Continued

an event for him. — To date, 173 members of the Class have paid the Alumni Association dues for this year and, if we may presume, read this column. That is 40.4 per cent of all members of the Class whose addresses have been secured by the Alumni Office. Of the 173, several have neglected to answer our personal letters. You to whom this applies, come on. — George Wald has been appointed mining engineer for the Arizona Magma Mining Company, operating in the Kingman district of Arizona.

Bill Keen writes from the Engineers Club, New York: "I am with Latrobe Electric Steel Company at present as sales metallurgist. I am still residing in Albany week-ends, living the balance of the time at the Engineers Club which I find very comfortable quarters. I had quite a sick spell last year, — was laid up for six weeks in April and May with sciatica, which is the most painful thing I ever experienced. I was about six months getting back to normal again and sure hope I'm back for once and all. I'm feeling better now than I've been for a long time. My job is taking care of development work on new steels, particularly the variety known generally as stainless; also looking out for customers' troubles on tool steels, and so on." — Dick Collins says: "I am with the New York State Department of Public Works, Division of Highways, at the headquarters office, 353 Broadway, Albany, N. Y. I am living with my wife, three daughters, and a son, all of which keeps me fairly well occupied. . . ."

We were sorry indeed to receive the following from Edward C. Smith and hope by the time this is read that he will be back in good health. "From the above address [207 East 3d Street, Tucson, Ariz.] you will conclude that my news concerns my health or lack of it. Last October I fell a victim of the flu which turned into bronchitis. While I made considerable improvement my physician advised me to get away from the raw and damp winter weather of February and March in northern Ohio, so I am enjoying the comparatively warm and balmy atmosphere of Arizona with its bright sunlight. If all that has been said of this climate is true, I should be on my feet in a month or two."

From Leslie Clough, whose office is at 80 Boylston Street, Boston: "I elected the option on heating and ventilating during my last year at Technology and have been connected in various capacities with such installations for the last twenty-four years. I am devoting my time now exclusively to consultation, plans, and specifications for heating and ventilating and such equipment. I have two six-foot boys, one having graduated from college and the other about to enter. Neither was technically inclined and both wanted to get away from Boston where I have maintained a residence in the suburbs, so neither will be a Technology alumnus. Having no particular achievement to relate, I can boast of being able to trim the boys at golf, tennis, or marbles, but rate third at sprinting and high jumping."

Elmer Wiggins has incorporated himself as E. W. Wiggins and Company, Inc., and continues to sell nixonoid, lacquer cotton, pearl essence, and pyroxylin from Leominster, Mass. Wiggins is President of the company which is capitalized at \$100,000. He was with du Pont for fifteen years, as assistant manager of their Hopewell, Va., works, and manager of their Arlington works. — Bob Cutting was last heard from in Ohio. His address is now 3514 East First Street, Long Beach, Calif. More, perhaps, later. — Dick Senger sailed on March 8 to visit Spain, Northern Africa, and Paris, and will arrive home about May 1. — Arthur Lord continues in the insurance business in Providence. He has given us clues which may bring out some more news. — Al Smith is stumped. He has offered no comment as yet on the Einstein equations.

Myron Helpen made a trip during the winter to Germany where, he says, the Touraine Glove Company has a factory. He professed business but admitted winter sports. He says that on the way home on the S. S. *Mauritania*, he stumbled onto Frank Elliott — after the Captain's dinner — which would indicate that he had been indulging in more winter sports. Frank was returning from his annual buying trip to Austria and Czecho-Slovakia.

Howard Edmunds writes: "Since writing you last year I have been admitted to permanent residence in this country and have now settled down with the Crocker-Wheeler Company and am doing what is to me very interesting work in connection with a new type of adhesion speed changer. My home address is 38 East 85th Street, New York, and my work is almost entirely at the Crocker-Wheeler plant here at Ampere, N. J. I have not yet had an opportunity to visit the Technology Club of New York at its new quarters, but hope to do so before long. I suppose the Class of '05 is scattered far and wide by now. I often think of the old days and of the good times we had."

Ed Barrier wrote in February: "About ten days ago I had dinner with Harold C. Mitchell and Mrs. Mitchell, of Erie, Penna. Mitch has recently been made plant engineer of the Erie Works of the General Electric Company, giving him general supervision of all buildings and grounds, as well as maintenance and power, which he formerly looked after. I spent the whole day with Mitch, going over various matters connected with our respective activities, and he seemed to be happy and contented in his new responsibilities."

Charlie Starr writes from Chicago: "For some five years now Uncle Sam has managed to get along without me and, strange as that may be, he seemed to succeed very well, too! As you know, I was in charge of building hospitals for the Veteran's Bureau in the Quartermaster Corps. It was a rather strenuous but interesting experience and I managed to keep out of jail withal. In May, 1924, I took a cruise of two months through Europe, hitting the high spots in France, Italy, Switzerland, Germany, Belgium, Holland, and England. That, of course, was a wonderful trip and has given me

food for thought ever since. During the war I traveled over this country quite a bit also, but when I came to Chicago I seemed to have squatted, having hardly left the windy, wicked city since. In fact, it was during the war that I met R. E. Schmidt '87 in connection with government hospital construction. He has built more hospitals than any other architect without question and is still going strong. Last year he built some \$10,000,000 worth. During the war we built some general hospitals, but principally tuberculosis or psychiatric hospitals. They range from a small doctor's office to a group costing several million dollars and are located all over the country. Some might say a hospital is a hospital, but the modern hospital of today, with all its many departments properly arranged with as far as possible a homey atmosphere for the patient, is a far cry from the pest house of a decade or two ago.

"The practice of Schmidt, Garden and Martin is not confined to hospitals, however. We recently finished a seventeen story store and office building here in the Loop for 'Stop and Shop.' You doubtless remember the attractive show windows in the old store on Michigan Avenue. The new one is heralded as the finest food store in the world. Everything in Chicago is the best, you know. A large department store is now on the boards, so we have plenty of variety. My particular end of the game is more in a business way, for example, explaining to an owner why the extras are so large, why he should not be able to change his mind, with a building half up, without costing him something. Another matter I might mention is the 1933 Fair. Personally I thought fairs were out of date, but I'm getting enthusiastic over this one. It will be novel, artistic, and extremely interesting. Instead of being tired out sightseeing, you will be able to see everything from moving platforms around the tops of the buildings, or from power boats or gondolas from the water surrounding and extending through all the buildings. So plan to see Chicago in 1933 and help celebrate its 100th birthday." — ROSWELL DAVIS, *Secretary*, Wes Station, Middletown, Conn. SIDNEY T. STRICKLAND, *Assistant Secretary*, 20 Newbury Street, Boston, Mass.

**'06** The following was taken from the Lynn, Mass., *Item* of December 8, 1928: "Albert W. Hemphill, Treasurer of the Boston, Revere Beach, and Lynn Railroad, was educated at the Massachusetts Institute of Technology and Haverford College. After graduating he was employed on steam railroad construction work for about three years. He went with Stone and Webster in 1909, and remained with that firm for about six years. While with that organization he was employed in the reorganization of the Metropolitan Street Railway, New York, for three years, and for the remainder of the time was with the securities department. He left Stone and Webster to go with J. G. White and Company, Inc., and remained with that firm for about a year and a half



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in an official capacity. He then went into business for himself as a consulting engineer. Later he became associated with Gardner F. Wells as a member of the firm of Hemphill and Wells.

"He is the son of the late Alexander J. Hemphill, who was at the time of his death chairman of the board of directors of the Guaranty Trust Company, New York, and is a brother of Clifford Hemphill of Hemphill, Noyes and Company, investment brokers. Hemphill and Wells took over the Interstate Street Railway Company on May 29, 1925; they took over the operation of Poughkeepsie and Wappingers Falls Railway Company on November 3, 1926; and the Boston, Revere Beach, and Lynn Railroad Company on November 15, 1927. Mr. Hemphill is Director of the above three companies and Treasurer of the Interstate Street Railway Company, and the Boston, Revere Beach and Lynn Railroad Company."

The Class at least maintained its five year average in attendance at the Annual Alumni Dinner at the Statler. Eight of the loyal veterans turned out, four from around town and four from outside the twenty-five mile circle. Charlie Wetterer and Carroll Farwell were present; Halsey Philbrick came from Hartford, and by the way, Phil is President of the Hartford Club this year and keeping things moving; Abe Sherman came in from Fitchburg, and Abe, you know, is President of the Worcester Club which maintains a student scholarship and all that; Herbert Ball was down from Lowell, and he knows the road pretty well as Herb and his wife come down quite often to visit their daughter who is a freshman at Wellesley College this year; W. G. Abbott, Jr., came all the way from Wilton, N. H., where he has been getting some fun out of mushing the past few winters, and may yet give Seppala *et al.* a rub; and oh yes, the two Secretaries were there.

Stew Coey is now circularizing over the title of Vice-President and General Manager of the James M. Seymour Company, makers of cyclonic cooling towers and such, and keeps his wastebasket at 19th Street and Springdale Avenue, East Orange, N. J. — Jack Norton, who is now Director of the Municipal Laboratory, Department of Health, Detroit, writes that he has recently seen Arthur Neale and Fred Willcox, both Course V men. Neale has left the Fish Cannery By-Products Company of Seattle, and was on his way east to investigate several openings. Willcox has lately returned from an extended visit to Russia in the interest of his company, Freyn Brassert and Company of Chicago, who have been awarded contracts for several steel plants there. Fred has some very interesting tales, we understand, of the conditions and customs of that chaotic country.

The Assistant Secretary had an opportunity to stop over in New Britain on March 18 and found E. M. Smith at the Stanley Works. Ernest had several bits of news, the most important (to him) being the arrival of a son, Richard Wilbor

Smith, on October 18, 1928. Max Coe was just recovering from a mean spell of sickness of several weeks' duration, and as Ernest expected to stop in and see him in a day or so he was given a message of sympathy and also of congratulation, for Max had just been promoted to General Manager of the Stanley Works, P. B. Stanley having retired as Vice-President and General Manager. Pete's retirement, after these many years of effective management and leadership, was announced by the Board of Directors while he was on the high seas, on a trip to Europe of several months. Pete will find plenty to do to keep out of mischief as he is chairman of the building committee which will erect a complete new church group in New Britain, and has also, of course, a wide range of interests.

Physicians from all parts of the continent attended the Thirteenth Annual Clinical Session of the American College of Physicians which was held at the Statler in Boston, April 8 to 12. This is of interest as Dr. James H. Means of our Class was general chairman of the committee in charge, and largely responsible for the interesting and valuable program offered the delegates. Dr. Means's father, you will recall, has established an undergraduate award in aviation. — Halsey Philbrick is getting to be a keen yachtsman. For this summer he has on order a Matthews 38 Express Cruiser which replaces a smaller craft. Phil is getting down to New Haven every other week for a special course in navigation at Yale. We may have personnel and equipment enough when the time comes to take the Class on a round-the-world cruise for our Twenty-Fifth Reunion in 1931. Which reminds us to urge all members of the Class to write to Ned Rowe, giving their ideas and suggestions regarding that Reunion, — where, when, and how to hold it, particularly if an All-Technology Reunion is held in 1930. — JAMES W. KIDDER, *Secretary*, 8 Harrison Avenue, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

'07 There was one member of the Class who attended the Twentieth Reunion in 1927 — his first reunion experience — who contributed a whole lot to the enjoyment of those present by his good fellowship and stories of his experiences since 1907, but about whom we have never written a word in *The Review*. This is Armen H. Tashjian of Courses I and IV, who was an instructor at Technology from 1908 to 1910, spent two years contracting in Portland, Maine, and then went to Cleveland, Ohio, where he has been located ever since. Tashjian is one of the partners of Walker and Weeks, architects, of 2341 Carnegie Avenue, Cleveland. We have a photograph of the very attractive building at this address, costing over \$750,000, and completed in March 1927, of which Tashjian is half owner. He is married, has two daughters, and lives at 2638 Fairmount Boulevard, Cleveland Heights.

Leslie C. Whittemore of Course XI is assistant sanitary engineer in charge of sewage treatment, Plant Design Division of the Sanitary District of Chicago, 700 South Michigan Avenue. In this capacity he has been in charge of the design of the North Side and West Side Sewage Treatment Works (except for mechanical, electrical, and architectural features) costing about \$35,000,000 complete. Leslie is married, has a son of fourteen years of age, and lives at 5639 Kenwood Avenue, Chicago.

Phelps Swett is still living in Middlebury, Vt., where he is Professor of Geology and Geography at Middlebury College. Phelps has three sons and a daughter. — BRYANT NICHOLS, *Secretary*, 2 Rowe Street, Auburndale, Mass. HAROLD S. WILSON, *Assistant Secretary*, Int. Shoe Company, Manchester, N. H.

'08 The second bi-monthly dinner of the 1928-29 season was held in Walker Memorial on Tuesday, February 12. Although this was our annual meeting, the number present was not large, possibly on account of its being a holiday night. The following fellows were present: Beede, Cary, Coffin, Freethy, Booth, Newhall, Mayo, Skillings, and Carter. We were particularly glad to see Damon and Skillings as it has been a long time since either of them has been to one of the dinners. Mayo reported the state of our finances, and while the Class had to dip into its funds on account of deficit on the Twentieth Reunion, we are still solvent with a balance to go ahead on.

Following the dinner and business meeting, Beede showed another moving picture film taken at our Twentieth Reunion. The pictures were taken at Craigville Beach when the bathing beauties of '08 were on exhibition. Beede also showed some very interesting pictures taken on one of his many visits to the Gaspé Peninsula, as well as the Saguenay River.

The Class was represented at the Annual Alumni Dinner on Saturday, February 16, by Appleton, Newhall, Skillings, and Carter. — Carl Banks, who is head of the Technical Department of the American Chatillon Corporation, is now located at Rome, Ga. — Henry H. Damon is living at 42 Orchard Road, Brookline, Mass.

The following extract is from the Canton, Mass., *Journal*, March 15, 1929: "Albert Laurie, Jr., two-year-old son of Mr. and Mrs. Albert Laurie, of Washington Street, had a very narrow escape from drowning this week. The little fellow fell into the brook in the rear of the Dr. Parker Holt Baby Wear Manufacturing Plant on Walnut Street. Luckily he was seen to fall in by some of the employees of the factory who immediately gave the alarm, and Paul A. Esten, the proprietor of the plant, rushed out and rescued the child, and after restoring him to consciousness carried the child home and summoned a physician. Mr. Esten resides on Walnut Street, Stoughton, and is a Scout Commissioner of the Old Colony

1908 Continued

Council and has long been active in boys' work. He is receiving the congratulations of his many friends for his prompt action in saving the child."

A. T. Scannell, general manager of the Archer Iron Works, Chicago, Ill., wrote as follows: "I am enclosing herewith check for \$5.00 to cover class dues in arrears as well as those for the coming year, as I realize that it is hard for the Class to function without the necessary wherewithal. You might be interested in learning that Jim McGowan, Jr., who is Vice-President of the Campbell Soup Company which has a plant in Chicago close to our plant, has recently been elected a director of the South West Trust and Savings Bank. The writer has also been a director of this bank for a few years past, and we believe that this is probably one of the few cases where two '08 men are on the same Board of Directors of a banking institution."

George Glover and Howard Luther are both preparing for our Twenty-Fifth, as you will note by the following letters. Glover wrote as follows: "I was very glad to receive the general letter and am enclosing my check. I also appreciated the little notation at the bottom of the letter. You are quite right about the Twenty-Fifth Reunion. I am very much interested in the outcome of it, and am going to do everything I can to make it a success. I am not going to let the opportunity slip now to let some of the boys who were not there know what a good time we had, and how we expect them at the next reunion." From Howard Luther we have: "The reunion was certainly a delightful success and if it takes money in the treasury to prepare such reunions, I certainly don't want it left bare. I hate to increase my age too rapidly, but I expect the 1933 Reunion to be a good compensation for the rolling around of another five years."

Don't forget the bi-monthly dinner on May 14. Dinner will be at 6:30 as usual at Walker Memorial. Plans for the summer outing will be discussed. — HAROLD L. CARTER, *Secretary*, 185 Franklin Street, Boston, Mass.

**'09** The Twentieth Reunion of the Class will take place at the East Bay Lodge at Osterville, Mass., from June 14 to 17. Jim Finnie reports that the returns to his letter of March 13 indicate that the Reunion will be a good one. Between the time these notes are being written and the appearance of the May Review, you will undoubtedly have received other literature from the Committee. If you have not already informed Jim as to whether you will attend the Reunion, it would be of great help to him to have you advise him promptly what you expect to do, so that he can properly plan for the party. From all reports from the classes who have had a reunion at East Bay Lodge, we have made a happy selection in the place at which to hold our Reunion. The dates selected include a week-end holiday (at least for the Bostonians), thus making it easier for you to get away. The crowd

will be a congenial one, and you will have a good time. Tell Jim you are coming.

F. Gardiner Perry, who is with Babson's Service at Wellesley, Mass., has a son, John Clark Perry, born on February 2, 1929. — Francis M. Loud, who is associated with Jackson and Moreland, is now representing that firm as resident engineer on the Lackawanna Electrification Project out of the Hoboken terminus of the road.

The sympathy of the Class is extended to Henry Dunn on the death of his wife, who died of pneumonia on March 3, 1929, at her home in West Englewood, N. J. Mrs. Dunn was the eldest daughter of Mr. and Mrs. Arthur W. Hale of Winchester, Mass. After leaving the Winchester High School, Mrs. Dunn was graduated from the Winsor School of Boston, afterward attending Vassar College. During the war she did secretarial work at the Massachusetts General Hospital, and later Red Cross work at Camp Devens. In addition to her husband, Mrs. Dunn leaves three children.

In the March number of the *Tech Engineering News* appeared an article by Tom Desmond on "Increasing Recognition for the Engineer — The Growing Demands and Opportunities for Engineers to Perform Public Service." — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. PAUL M. WISWALL, *Assistant Secretary*, Postum Company, 250 Park Avenue, New York, N. Y.

**'11** Well, classmates, Easter is just around the corner as these notes are being penned and before they appear in print we will have had one of our local '11 get-togethers, news of which will be published in the next issue.

We have just learned indirectly that Isaac Hausman, I, has now formed The Hausman Steel Company, P. O. Box 416, Toledo, Ohio. We hope to have details at hand from Ike soon, but for the moment we can make only this bare announcement. — Sam Hayes, V, has left the metropolitan district, where he was formerly superintendent of The Bronx Company, and is now in the textile industry at Hartsville, S. C. — Frank Osborn, III, is back in the States from South America for a few months, so Ye Secretary learns from Stanley Osborn '15, with whom Frank is making his headquarters at 41 Brace Road, West Hartford, Conn. — Ted Van Tassel, X, is branching out in his leather activities and now has a new plant for his patented inner soles and other leather products at Norwich, Conn. where he may be reached at P. O. Box 477.

In closing let's remember that there is one more issue — the July number — in the current volume of *The Review*, and if you write to Dennie, he'll write for you in the 1911 section of the Class Notes that month. We need a lot more notes for the next issue. — ORVILLE B. DENISON, *Secretary*, The Lamson Company 213 Congress St., Boston, Mass. JOHN A. HERLIHY, 588 Riverside Avenue, Medford, Mass.

**'12** First we'll serve up verbatim a letter from Bates Torrey, X., and give you a few secretarial wisecracks afterwards. "I have just received your letter on my return to Syracuse in which you remind me of my various promises to you, dating all the way back to September, 1928, to provide a brief outline of what I have been doing, if anything, since leaving the Institute.

"As I told you in New York, this is going to be rather brief and you can add anything to it that you desire, true or otherwise, to serve your purposes. Although I was graduated in 1912 along with the rest, I apparently was somewhat conscience stricken at receiving my degree, and accordingly went back to the Institute for a fifth year continuing the same Course X in Chemical Engineering. At the end of this fifth year the authorities of the Institute discovered that they had several S.M. degrees that were to be left over unless otherwise disposed of, so I managed to acquire one of these.

"Since that time I have been attempting to earn a living in engineering work. In June, 1913, I started activities with the Semet-Solvay Company, with headquarters at no place in particular, but traveling rather frequently among the twelve or fifteen Semet-Solvay plants then in operation. The work at that time related particularly to equipment and operation in connection with the recovery of coke oven by-products such as gas, tar, ammonia, light oil, and so on. After roaming around the Middle West among these plants for about two years, it was decided that the only way to locate me when I was wanted was to establish a definite headquarters, which was accordingly done, and I have been in Syracuse ever since.

"Activities with the Semet-Solvay Company continued along the lines of engineering, design, and operation until 1922, at which time activities became somewhat slack and the Semet-Solvay Company seized the opportunity to get rid of me, and accordingly wished me on the Solvay Process Company which is a kindly neighbor with main offices also in Syracuse. Since that time my interest has been largely along engineering lines with the Solvay Process Company. At the present time I am attempting to live up to the position of chief engineer, which I find occupies an undue share of my time. I realize that such an admission implies that it probably takes me longer to do the work than it would most people, but I find it a convenient excuse for delaying or not doing at all, disagreeable tasks as, for example, preparing material for Class Secretaries, and so on.

"Needless to say I am married and can boast of one prospective addition to the engineering profession who will probably graduate from the Institute about 1938. I very seldom see, or meet, any others from our Class except Murray Hastings and Freddie Barker, who are now living in Syracuse, and are, respectively, President and Secretary of our local alumni association. I used to see Jake Pratt at intervals, particularly when



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I was traveling for the Semet-Solvay Company, but I have not seen him for several years now. I guess you are the last classmate that I have seen within the past six or eight months. As indicated above, I have purposely made this brief, realizing that with so many histories to crowd into the small space allotted in *The Review*, you will appreciate this in such form."

Now just look back, Gentle (or otherwise) Reader, at the second paragraph in the epistle of Mr. Bates Torrey, Esq. Do you get the idea? He insinuates, the low life, that your secretarial department should do some monkey-bizness with his letter, to serve "your purposes." Our purposes, let us state, Mr. Torrey, are to serve the readers of this estimable journal, and, with high ideals of truth and justice, we stride ever forward unflinchingly toward the goal. (Officer, put those rowdies out!) And please note, brother classmates, his scornful reference to preparing material for Class Secretaries as a "disagreeable task." Just to show our Christian disposition we respectfully offer Mr. Torrey, the "ticklish task," the "joyful job," the "pleasant pastime" of trying to get material for Class Notes.

Comes the dawn! And with it, what do you suppose? Yes, sure enough, a word or two from old Cornelius A. Duyser himself. Duyser, the boy who made Course XI infamous. Duyser took a year of research work at the Institute after the rest of us started cultivating acquaintances among the so-called employing classes. Duyser followed us out into the cold world a little later, but with the background of an extra degree or two, he seemed to get on speaking terms with some of the bigger fellows. At any rate in the past fifteen years he has accepted pay checks at one time or other from Metcalf and Eddy; Westinghouse, Church, Kerr; Pitt Construction Company; Dwight P. Robinson; and others. At this writing Duyser is in good standing with the paymaster of the Standish Engineering Corporation, Chicago, Ill., and it seems they build bridges, or something in Michigan and Florida, or anywhere else that Grade A bridges happen to be in demand. Married? "Yes, nine years." Family? "One daughter almost five, and a recent arrival, C. A., Jr., born February 3, 1929." He admits he is still collecting jokes. We hope you have a new one, Duyser, to replace that famous one about Pat and Mike. Duyser's address is 136 North Avon Street, Rockford, Ill. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, 411 Maitland Avenue, West Englewood, N. J.

'14 Dinney Chatfield gave a most interesting luncheon talk on March 5 on the subject of progress in aviation. While the number attending was somewhat smaller than usual, those who were present spent a very pleasant and instructive hour. Dean Fales assisted by presenting as souvenirs to each one in attendance one of his patent bottle openers. Those present were

Trufant, MacKenzie, Crocker, Chatfield, Wilkins, Richmond, and as guest, Acting Dean Lobdell.

After he had been lost track of for years, Walter Scott Hughes turned up in Cambridge, England. What he is doing remains a mystery, but we feel certain that it is along academic lines.—On his questionnaire F. J. Van Etten reports that his most important achievement in the last five years is "putting up with (or tolerating) Vic Gallene and Leo Walsh (both '14 men) every day in the office here. I had a wonderful European trip without having them wreck the business while I was away." Van is running a large contracting business in Boston.

Henry F. Merrill, who has been in Shanghai several years for the Standard Oil Company, writes that he is to return to the United States for a visit this summer, but will miss the Reunion by about three weeks.—Edmund J. Reardon appears again in our active list. Although right in Boston, we have not heard from him for several years. He is well established as a real estate appraiser, is married, and has a boy and two girls.

These architects seem to have the secret on anti-race suicide. Last month we called attention to the records of Paul Howes and Stirling Harper. Now Bob McEnary sends in his record of two boys and two girls, the younger boy and girl being twins. That is a fine start, Bob, but you are still one behind Howes and Harper.

C. J. Walton reports the arrival of a third son on January 17. Walton is with the Bell Telephone Company of Pennsylvania, and is stationed at Harrisburg.—Some of the unreported vital statistics to be uncovered by the questionnaires include the arrival on August 14, 1926, of Janet Snow, daughter of Leslie W. Snow; and a son to Percy McCullough on April 10, 1927; Ed Wentz has been married five years and is just telling us about it.

Jerry Blakeley gave a lecture before the Chemical Society at the Institute on March 27. The subject was "Asbestos." This is an excellent subject for any '14 man!—H. B. RICHMOND, *Secretary*, 100 Gray Street, Arlington, Mass. GEORGE K. PERLEY, *Assistant Secretary*, 21 Vista Way, Port Washington, N. Y.

'15 This has been another big month for our column. First there was the enjoyable Boston dinner on March 18 at the University Club. Nineteen men attended, the largest number we have ever had at such a gathering. The success of the evening was due to the help of about ten fellows acting as key men, who got in touch with five or six others. The life of the party was, you've probably guessed it, George Rooney and John O'Brien. No use to try to tell you their stories, you simply have to see and hear this pair in action to appreciate them in the rare form they showed that night. In telling funny, if not clean, stories they were seconded by Bob Mitchell, Pop Wood, Jack Dalton, Les Heath, and Joe Phelan. John O'Brien is superintendent at the popular new

Boston Garden, but he has no extra tickets for the big league hockey games. He is slightly bald, sharing that class with Joe Phelan. In a discussion of the present-day requirements at the Institute in comparison with those of our day, John said that in 1911 he secretly voted that the course be extended to eight years. The Faculty, however, took no action on this.

It was a great evening. I am sure we all enjoyed the interesting talks we had and the pleasure of renewing our old acquaintances. The first move toward our Fifteenth Reunion in 1930 was made in a general discussion. Such a good time was had in 1925 that it was decided to follow the same general plan but to have the Reunion nearer to New York to accommodate the men there and those coming from the South and West. Of course we shall do nothing definite on this until next fall. In the meantime let me have your suggestions and advice.

Around the table were (the record of each one's family is recorded for friendly comparison): Max Woythaler, V, one boy; Leslie Heath, V, three boys and one girl; Louis Young, II, one boy; Abe Hamburg, XI, one boy and one girl; Art Nelson, VI, one boy and one girl; Carl Wood, I; Waldie Pike, I, three girls and one boy; Jack (John N.) Dalton, X, single; Chet Runels, IV-2, three girls; Joe Phelan, VII, just married; Jac Sindler, X, single; Herb Swift, II; Larry Landers, X, just married; Whit Brown, IV, two girls; Jack (Marshall B.) Dalton, I, two girls; Bob Mitchell, V, two girls; George Rooney, I; Johnnie O'Brien, I, II, VI, VIII, X, two girls; Azel Mack, X, single. It is interesting and perhaps unusual to note that of the twenty-five children, seventeen are girls and eight boys. You need no imagination to guess some of the remarks this fact brought forth. Incidentally, the average of slightly more than one child per man present was some consolation to the three single men. From the descriptions of the positions held we decided that nine of the nineteen are still following the profession.

Such old standbys as Mitch Kaufman, Clive Lacy, Henry Sheils, Al Sampson, Arch Morrison, Evers Burtner, Gene Place, and Loring Hayward planned to come, but had to call it off. Frank Scully, as you know, is still on his world cruise with Mrs. Scully. Jac Sindler took some time exposures of the group at dinner and if these pictures come out well I will send one to each of the fellows there and to any of you who will write me.

Lucius Bigelow was one of my key men. He wrote from Providence: "I am not sure yet whether it will be possible for me to attend the class dinner. However, I will be glad to communicate with the men on your list and urge them to go. If I am not there I should be glad if you will convey my kindest regards and good wishes to all the fellows and tell them I should be more than glad to welcome any one of them here in Providence any time." That's a good letter, Lucius, and although the fellows were glad to hear from you, they would far rather have seen you.

1915 Continued

I must tell you about the bowling after dinner. With so many married men on a night out, we had to celebrate. Jac Sindler, Bob Mitchell, George Rooney, Les Heath, Max Woythaler, Abe Hamburg, and I bowled a trial string to determine who was who. Jac, Bob, and George were the high men and teamed against the four of us. But skill will tell in the end, and in the next two competitive strings the weak four of us swamped the three high men. It was a great, good-natured match.

At the February convention of the American Pulp and Paper Association at the Waldorf in New York I saw Ken King, X, and Allen Abrams, X. Both looked and felt great and sent best regards to all their old friends in the Class.

I am very happy to record these splendid letters from so many of our men in different parts of the country, even of the world I might say, for Doug Baker writes again most interestingly from Madrid, Spain: "This is to thank you for your letter of December 29. I have had some telegraphic correspondence with Scully about his trip, and hoped to see him here during the next month, but he has just informed me that he will not be able to make Spain, although we may have an opportunity of seeing each other in Paris.

"Until such time as I am able to attend a class reunion, the Class Notes in The Review are the only means of contact I have with other members of the Class, and I read them with an interest which is intensified by distance. I hope that in 1930 I shall be back for the Fifteenth Reunion, and have a chance of renewing old acquaintanceship. Please note that my address now is Standard Eléctrica S/A, Apartado de Correos 7040, Madrid, Spain.

"Some time ago Teléfonos Bell was absorbed by the Corporation of the present name, which has a considerably larger field of activities. Our present capital is almost \$4,000,000, and we are employing around 1,800 people. Most of these are located in our telephone apparatus and equipment factory in Madrid, the rest are in the telephone cable factory which we have built in Santander, or scattered about the country working on the installation of automatic telephone exchanges. By June of this year the telephone exchanges in the nineteen most important cities in Spain will be automatic. A very comprehensive long distance service already covers the whole country, as well as giving communication with the rest of Europe, and by means of the transatlantic radio with America. As a result of the fine plant that has been put in the toll traffic is increasing remarkably, with the result that the toll facilities are again being increased very considerably. As manufacturers we are of course almost equally interested with the operating company in such developments, as it means a good manufacturing program for our plant."

Clarence (Wink) Howlett, X, comes to life from Kokomo, Ind. Glad to hear from you, Clarence. "I found your letter under a pile on the desk today. Please find enclosed a check. Your notes are fine in The

Review and I enjoy reading them very much. Some day I will have enough time, I hope, to write something for reprint to help lighten the burden now carried by the few faithful contributors."

Gerald D. Robinson says from Annapolis, Md.: "Any one who can refrain from asking for money for thirteen years ought to get it when he does ask." This came with his class dues. Thanks, Jerry. — Charlie Norton, II, formerly with the United States Rubber Company, is now sales engineer with the York Heating and Ventilating Corporation at 46 Cornhill, Boston.

Professor Locke's office sent in this about Dierks, II. Our congratulations to him in his new position. "DeVere Dierks, Secretary and Treasurer of the Dierks Lumber and Coal Company in Kansas City, Mo., is now Treasurer of the new company, the General Dry Kiln Company, recently formed by a merger of several dry kiln companies in Portland, Seattle, and New Orleans."

Alf Hall, II, followed up his letter by coming down to the dinner. More of him later. "Here is another answer to an ancient appeal for class dues that has been lying around my desk for some months. Please pardon the delay, but as the old saying goes, 'Better late than never.' I suppose you folks around Boston are looking forward to the coming Annual Alumni Banquet at the Hotel Statler. I wish I could be with you, but as it is quite improbable, I will have to rely upon you to give my best regards to any of the gang that attend the function."

F. A. W. Davis, I, comes under the spell of Lucius's example and from Cleveland, Tenn., sends in this interesting story of himself and his doings. Note the "Fair and Warmer" for F. A. W. Good work, Fred, don't wait so long to write again. "I have never missed an issue of The Review, nor do I overlook reading carefully the '15 Class Notes, even though many of the men are strangers to me. When I saw Lucius Aurelius suddenly burst into the limelight with his interesting squib I thought it was my turn.

"As to myself, I am superintendent of a mining corporation, mining and milling non-metallic minerals, with mines in East Tennessee and North Georgia. This section has a great wealth of minerals, both metallic and non-metallic, as well as coal. Waterpower is available by the million horsepower. Some of the largest plants being built today are located in this section extending from Bristol, Va. - Tenn. to Birmingham, Ala.

"I have been married twelve years and am supporting a family of two boys and a girl. If any of the gang get down in this section, tell them to come to Cleveland and ask for 'Fair and Warmer' Davis. I won't be hard to locate."

Ted Brown, X, is special agent in Hartford, Conn., for the Automobile Insurance Company. By now, Ted, you have the Connecticut list you requested, and I do hope you can contact with some of our men down there. Maybe you and I can organize a Hartford dinner this spring. I expect to see Ted soon. "En-

closed you will find my check for two bucks for class dues. Can you, at your convenience, send me a list of '15 men in Connecticut, together with their addresses? I am going around the state constantly, and it is very possible that I might be able to track some of them to their lairs. I got a card Christmas from Paul Connor. He apparently is wintering in Arizona. I occasionally see D. C. Ramsay in Bridgeport. He is located there selling bonds. Where are Lawrence Bailey and Lester Armstrong? Stop off in Hartford some time on your way through."

Old Pop Wood, I, that's Carl Wood on the records, is just as funny as ever and tops off these letters with a really funny one. He is with Stone and Forsyth Company, Boston, paper and twine jobbers. They buy from our mill so I see Carl occasionally. As I said several hours ago in these notes, Carl aided and abetted the gaiety of our dinner with the tales of his experiences selling paper. "Last but not least! I have had this two dollars on my conscience long enough. Tonight I know I'll get a good night's sleep. But in this busy game of ours, trying to keep the home fires burning, we are apt to put off some of our outside matters. Let me congratulate you on the efficient way you are keeping the Class Notes alive. You are surely getting somewhere with them.

"How is the paper business? I hope you have had a successful year. Personally I have. I think I have to date demonstrated to my firm that an engineer can sell paper, rope, twine, and so on. Drop in and see me."

At the Annual Dinner of the Alumni Association at the Statler on February 16, the '15 table had Art Nelson, VI, Larry Landers, X, Herb Swift, II, Whit Brown, IV<sub>2</sub>, Alf Hall, II, Jack Dalton, I, Arch Morrison, II, and myself. Alf Hall brought his brother down from Portland, Maine. He came himself from Berlin, N. H., and we were glad to see him. It was an enjoyable little gathering, swapping experiences and stories. Art Nelson says Jasionowski '16, II, was killed in 1924 in an accident in South America. Art corresponds with Ken Boynton, VI, who is with the General Electric Company, Mexico City. I wonder how he fared during the recent uprising there.

Bear with me, fellows, a little longer as there is not much more. From our class mailing list of 445, I received dues from 112 or twenty-five per cent, which is an excellent showing. To all these fellows my heartiest thanks for your spirit and interest in responding so promptly on class dues. To the fellows who have written in about my efforts with the notes goes my appreciation. Your pleasure in reading about our Class is a reward and gratification to me. — AZEL W. MACK, Secretary, 377 Marlboro Street, Boston, Mass.

'16 It is most gratifying to learn that my humble efforts in the March issue were noted and appreciated. To be sure, the response from the Class as a whole has not been large, but several complimentary



1916 Continued

letters have been received, together with interesting news from the several senders.

Even the other classes are taking interest in the '16 Notes these days, as evidenced by the following from G. J. Gross '26: "I see that the '16 Class Notes are picking up. I might also add fuel to the fire by giving the whereabouts of my brother, Charles F. Gross. He was married to Helen Mae Dickey of Somerset, Pa., on June 21, 1928, at the home of the bride. He is Assistant Professor in Marine Engineering at the University of California, and lives at 1770 Thousand Oaks Boulevard, Berkeley."

Plans are being prepared for a six-story building at 304 Boylston Street, to be occupied by The Lamson and Hubbard Company. The architect for the building is none other than our old classmate, Isidor Richmond, who aims to design "a building in the modern spirit, with freedom from restraint of tradition, but with distinct refinement." The building is expected to be ready for occupancy by the latter part of April, 1930.

As many of you doubtless noted in a recent issue of The Review, Professor William Brown of the Department of Aeronautical Engineering has been appointed technical assistant to Lt. Doolittle, who has charge of the full-flight laboratory of the Daniel Guggenheim Fund for the Promotion of Aeronautics. It is understood that their work will chiefly be to evolve a system of navigating airplanes through fog. Without doubt, this is the greatest handicap to aviation today, and we surely hope that a '16 man will be the one to solve the problem.

At the Annual Alumni Dinner, held this year at the Hotel Statler, the following '16 men were present: Don Webster, Jeff Robertson, E. H. Townsend, and the Secretary. Don is now Treasurer of the Clifton Manufacturing Company in Jamaica Plain, manufacturers of rubberized raincoats and other rubber specialties. He is no longer the carefree bachelor, as he was married last fall. He now lives at 2 Autumn Street, Boston. Apparently wedded bliss in a home of his own has a strong hold upon him, for he has promised repeatedly to make me a call, but never seems able to break away. Jeff Robertson is now chief engineer at the Mount Hope Finishing Company at North Dighton, Mass. He is living in Taunton, but expects to move soon to North Dighton, where his company is building a house for him. John Douglas, Jr., arrived on June 20, 1928. Report has it that he is as good looking as his father, which is hard to believe. E. H. Townsend is associated with the National Appraisal Company, Ltd., working out of the Canadian branches at Toronto and Montreal. He still maintains his residence here in the States, however, and apparently manages to spend at least a week with his family every month. As it happened, the company with which I am affiliated needed a small appraising job done, and Townsend's company fixed us up with the utmost dispatch.

John M. Hood of Course V is now chemist at the Pawtucket Manufacturing Company in Pawtucket, R. I.—The following is taken from a recent issue of the *Engineering and Mining Journal*: "J. Spotts McDowell has been appointed director of research of the Harbison-Walker Refractories Company, Pittsburgh, Pa. The scope of the company's research work will be broadened at the central laboratory in Pittsburgh, and in general, control work to insure uniformity of product will to a large extent be handled in the smaller laboratories at the individual plants. Mr. McDowell, who has been connected with the Harbison-Walker Refractories Company for a period of years, is well known to the refractories and allied industries through his contributions to technical literature and his activities in the American Ceramic Society, the American Society for Testing Materials, the American Refractories Institute, and other societies of which he is a member. He is a graduate in mining engineering of the Massachusetts Institute of Technology." — HENRY B. SHEPARD, *Secretary*, 269 Highland Street, West Newton, Mass. CHARLES W. LOOMIS, *Assistant Secretary*, 7338 Woodward Avenue, Detroit, Mich.

**'17** Write in your own headline for this item and set it up in big type. Mr. and Mrs. William Redfield King of 120 Bigelow Road, West Newton, announce the engagement of their daughter, Miss Margaret King, to Mr. George Montgomery Lovejoy of Cambridge, son of Mrs. Ellen M. Lovejoy of Littleton and the late George Montgomery Lovejoy. A dinner has been promised to the salesman who markets the bachelor emeritus—his fall from glory will produce a shock of only slightly greater intensity than did the news about Monty. When interviewed by The Review's Young Man, Mr. Lovejoy was apparently in a normal state of health and seemed reasonably happy although somewhat subdued. The wedding will take place soon.

Mr. A. Travers Ewell and Mr. Thomas Meloy, consulting engineers, announce the formation of a partnership under the name of Ewell and Meloy to better serve their clients on financial and industrial problems in both North and South America at 1 East 42d Street, New York. Meloy says "We also represent a grocery chain in Oklahoma and some ladies' department stores in New York City, as industrial engineers, which gives us a little variety."

I. B. Crosby delivered a very interesting paper on "Electrical Exploration Methods for Location of Dams and Tunnels" before the Boston Society of Civil Engineers. His paper was very well received and was discussed at length by prominent members of his profession.

Lucius Tuttle Hill writes from Boston that he has joined the investment counsel house of Shaw, Loomis and Sayles. Loosh says there was nothing the matter with Flinkote but that he had a hankering to get back into the financial game

and took advantage of an excellent opportunity. He gave us the first news of his daughter, Katharine, who is now nine months old. — RAYMOND S. STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass.

**'18** A third Boston luncheon came on Monday, March 18, and again I can say that we are growing in size. This month thirteen of the Class showed up, including Paul McGreenery, Ray Miller, Maggie Magoun, Carleton Tucker, Harry Camp, Tom Kelly, John Clarkson, Fred Washburn, Lovey Collins, Art Russell, Al Murray, Ralph Whitcomb, and the Secretary. There will be another on April 15, and still another on May 20. Remember the third Monday of each month at the Engineers Club at 2 Commonwealth Avenue.

Word has come to me that Don Merrill has left Bird and Son at East Walpole and is now in Hartford, Conn. Don, let us know what you are doing down there. — A little bird brought me the news that Sam Fuller is the proud father of a young son. You can just imagine how happy he must be as he already has two young daughters. Congratulations to Mr. and Mrs. Fuller!

The Boston Post brought us the news that at the Kingsbury Manufacturing Company's booth at the Boston Flower Show was the original model of Major H. O. D. Segrave's racing car which only a few weeks ago made the new world's speed record. This is the model on which all tests were made. It is now in the hands of Chester L. Kingsbury, a member of the firm who is a member of the Class of '18.

These are the shortest notes that '18 has had for some time. I am sorry, but what can I do if the Class will not come forward with news about its members? I may do what I threatened to do, make stories out of whole cloth. How would you like that? Please send in some news! — GRETCHEN A. PALMER, *Secretary*, 148 State Street, Boston, Mass.

**'19** Engineers cannot do simple arithmetic! At least, this is what I am told by some and sometimes I think that there is an element of truth in the accusation. But when it comes to adding ten to nineteen there is not one '19 man who doesn't get twenty-nine. The significance of all this introductory matter is that it will remind you again that the Class of '19 is going to hold its Ten Year Reunion on June 7, 8, and 9 of this year. Most of you are too widely scattered for Oscar Mayer to get in personal touch with you to announce the Reunion, but he has sent you some literature on the plans. About the time that you receive this copy of The Review you will also receive a reservation card for the Reunion and Oscar wants me to ask you to be sure and return it.

Paul Sheeline sends the following notice: "Plans for the Reunion are progressing very rapidly. We are assured of an ideal location in the Corinthian Yacht

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Club at Marblehead, Mass. Boating, swimming, fishing, tennis, and golf are only some of the activities which are available. However, the main excuse for the Reunion is to see fellow classmates whom you haven't seen for years. There were over five hundred men enrolled in our Class. Your committee will do everything in its power to make things agreeable and pleasant for you when you come to Marblehead. We feel that we should have over 150 men back at this Tenth Reunion. Remember that there are only two real reunions — the Tenth and the Twenty-fifth — and this is really your first opportunity. Don't neglect it."

Will some one who knows Jimmy Reis's address send it to me? I sent him a letter and it was returned. If some of you fellows to whom I wrote did not answer at the time, please do not think that it is too late now. — We have recently learned that Ike French is now living in and commuting from Stamford, Conn. — Raymond Newcomb is still with the Kewanee Boiler Company, Inc., in the capacity of Assistant Sales Manager. His headquarters are in New York and he lives in White Plains. Newcomb is married and has two children.

We had lunch the other day with Fish Gilbert and we were much interested in his story of a tour which he made some time ago through Italy. His conversation with *Il Duce* was very amusing and I would recommend that you all ask him about it at the Reunion. — WILFRED O. LANGILLE, Secretary, 144 Acme Street, Elizabeth, N. J.

'22 To those of the Class who believe that there has been a change in personnel and that Rip Van Winkle has been appointed General Secretary of 1922, these lines will come as an official denial. Spring is now with us and the Class Secretary, along with the species of the family Ursidae, now feels strong enough to emerge from hibernation.

I am forced to confess that this re-appearance does not come in response to any overwhelming demand. A particularly determined personal secretary, the remorseless efficiency of *The Review's* follow-up system and the constant complaints of Robert H. Richards '68, the one remaining reader of this segment of the Class Notes, are the joint causes. Let no one suggest that the attacks of the Class of 1921 have had the effect of intimidation or that the proud spirit of your Secretary has been broken by the weight of slander, contumely and misunderstanding which the officers of this Class have seen fit to heap upon his head. It might as well be admitted that the absence of '22 notes since last July has been brought about by an acute attack of that tired feeling — not peculiar to the General Secretary, but epidemic and affecting most of his course confrères as well.

Having now at great pain avoided a lengthy and verbose introduction, we proceed to the record. There is a good deal of this. Much of it is unhappily no

longer news and when you find it parading here in a journalistic guise, you will please understand that it, like the stock advertisements of the U. S. Steel Corporation, is being published for record only — lacking the slabs of travertine and the stone cutter's tools which would, if time permitted, be a more suitable medium of impression.

Let us then divide up our priceless nuggets of information according to some logical scheme.

Classification I. The Vernal Urge. The following engagements have transpired since Notes last appeared (if any of these happy couples have already had the blessing of heaven they will please forgive the Secretary who, it must be remembered, is a naive bachelor). Here is the list for which, unhappily, we cannot supply dates: the engagement of Miss Frances M. Wilson to Mr. Albert L. Sargent, announced at a luncheon and bridge held at the University Club. Miss Wilson is the daughter of Mr. and Mrs. Clarence P. Wilson of Malden, and was graduated from Tufts Forsyth Dental School in the class of 1927. The engagement of Miss Evelyn Mary MacKenzie to Clarence William Perkins of Everett. Miss MacKenzie attended Emerson College and Boston University. The engagement of Miss Sarah Gordon, daughter of Mr. and Mrs. Albert F. Gordon of Brookline to Henry Clifford Gayley of 930 Park Avenue, New York City. Miss Gordon attended the Walnut Hill School in Natick and was graduated from Smith College in 1926. The engagement of Miss Ruth Underhill, daughter of Mr. and Mrs. Arthur Perley Underhill of Newton Center to Mr. Edward F. Bowditch of Brookline. To the above the Secretary begs to extend on behalf of the Class the most cordial good wishes.

Classification II. The Mating Call. There seem to be vastly more marriages than engagements and although we don't quite understand how this can go on, the list follows: Miss Dorothy McAdams, daughter of Mr. and Mrs. M. L. McAdams of Waban, was married to Daniel Arthur Brown, Jr., of Brookline in the Newton Highlands Congregational Church on June 5, 1928. J. Frederick Brittain was the best man. The bride was graduated from the Framingham Normal School with the class of 1925. Miss Alyce Davison was married on June 23 in the Broadway Congregational Church of Taunton to William Palma Dickerman. Miss Davison was graduated from the Mary C. Wheeler School in Providence with the class of 1924. She is the daughter of Representative and Mrs. William J. Davison of Taunton. Miss Harriet Octavia Harris was married to Leonard Bentley Laird on June 23 in the home of the bride's parents, Mr. and Mrs. William Harris of Springfield, Mass. Miss Helen Wyckoff of Alton, Ill., was married on September 8, 1928, to Wilbur J. Woodruff. They make their home in Alton. Miss Eleanor Wood, the daughter of Mr. and Mrs. Harry Johnson Wood of Wayland, Mass., was married to Maurice Willard Williams of Philadelphia, on June 17,

1928. The former Miss Wood was graduated from the Wheelock School in 1926. Miss Helen Gertrude LaForce was married to Lester Clark Lewis on September 20, 1928, at the Cathedral of St. John the Divine in New York. The bride is the daughter of Mr. and Mrs. Frank E. LaForce of Schenectady, N. Y. Mrs. Lewis was graduated from Middlebury College with the class of 1924. Before her marriage she had been engaged in research work for the General Electric Company. Mr. Lewis is associated with the Edison Lamp Works of the General Electric Company at Harrison, N. J. After the wedding the couple sailed on the steamship *Deutschland* to enroll for an eighteen months' course at the University of Leipsig in Germany. Miss Elizabeth Whitney Adams, daughter of Mr. and Mrs. Wilton Adams of Wellesley Hills, Mass., was married to Kenneth Gibbs Hamilton of Fall River on September 29, 1928, in the First Congregational Church at Wellesley Hills. Plymouth, Mass., was the scene of a double wedding when Miss Jessie E. Bain became the bride of Raymond E. Miskelly of Winthrop and Plymouth at the same time that the bride's sister was married to Lawrence L. Dale.

Miss Grace Seamans Mason and Robert Hoey Haire were married at the First Congregational Church of Cambridge on September 29. The couple are now at home at 41 Wendell Street, Cambridge. Miss Elizabeth Hurlburt Fisher, daughter of Mr. and Mrs. George Burgess Fisher of Hartford, Conn., and Willard Deane Leshure were married on October 6, 1928, in the Asylum Hill Congregational Church at Hartford. The former Miss Fisher is a graduate of Miss Porter's School at Farmington. On October 1, Miss Margaret Hope Newell, daughter of Mr. and Mrs. Lewis Newell, was married to Albert Perry Powell at State College, Pa. They are now at home at 625 West College Avenue, State College, Pa. Miss Eleanor Virginia Scofield, daughter of Mrs. Ernest Wilbur Scofield, was married to Elmer Lawrence Johansen, Lieut. U. S. N. R., on September 3, 1928, at Morenci, Mich.

Which brings us to the current year. On February 16, 1929, at Newark, N. J., Miss Carlys Randolph Welsh was married to Francis Mason Kurtz. They are now living at 120 West 58th Street, New York. Miss Nellie Gwendolyn Gilson was married to Mr. Charles Willis Stose on Saturday, March 9, 1929, at West Oak Lane, Philadelphia. They will be at home after April 15th at the Westover, 4740 Pine Street, West Oak Lane, Pa.

Classification III. The Logical Result. On January 31, 1928, a son, George Albert, was born to Dr. and Mrs. Amos H. Stevens. . . . On March 13, 1928, a son, Risque Lindgren, was born to Mr. and Mrs. P. C. Benedict. On November 24, a son, David Lloyd, was born to Mr. and Mrs. Lloyd E. Raymond. Says Lloyd, in course of this announcement, "I have seen no 1922 news this year. A little is better than nothing." We are extremely



1922 Continued

grateful to him for having contributed his little, and regret the reticence of other members of the Class.

Classification IV. Visiting Firemen. There have been few of these. Number 8 Arlington Street is in Boston, and not as many seem to believe, in French Oceania. There are a great many other means of conveyance other than camel trains or sedan chairs that can be used to reach this outpost, but, notwithstanding, calls have been few. These few, however, have been of excellent quality. We beg to report visits from King Crofton, now happily ensconced in the coal business in New York. Then there was Bill Hoops, who is with Brown, Percy & Co., Investment Securities, 100 Milk Street, Boston. He called during March and discussed investment trusts learnedly. An investment trust is little more to your Secretary than an abstraction like the Theory of Indeterminacy or Infant Damnation. Bill, we are afraid, was a trifle disconcerted to discover this naïve attitude. The interview was, nevertheless, pleasant. We have also to report an excellent lunch with Ray Rundlett, the rapidly brightening luminary in the sky of mail order merchandising, with Daniel Low & Company in Salem.

Classification V. Charivari. Joe Keenan, who likewise deserves mention under the heading of Visiting Firemen, is now Assistant Professor of Mechanical Engineering at Stevens Institute of Technology. . . . K. B. Perine of Dorchester was appointed on September 21, 1928, as temporary agent in the Health Department of Newton, Mass. . . . Captain Walter Sitz of the U. S. Bureau of Aeronautics at Washington became, on September 27, head of the School of Aeronautics at Wichita University in Kansas. Professor C. E. Locke of the Mining Department reports that Paul S. O'Brien is still with the Aluminum Co. of America at 120 Broadway, New York, in the sales department, and is at the present time taking care of the aluminum paint division and doing some work on aluminum shingles and building material. Professor Locke also reports that Floyd J. Wilson has recently entered the employ of an exploration company in Manitoba, Canada. . . . O. S. True, who should also be cross-referenced to Classification IV, is now with the U. S. Rubber Co. at 1790 Broadway, New York. He is in the general sales department and the hard rubber department, which latter strikes us as the less desirable of the two. . . . And here is still further information from Professor Locke, whom your Secretary respectfully nominates as his successor: Donald S. Phelps is now with the American Smelting & Refining Company, stationed near Parral in the State of Chihuahua, Mexico. And Leland E. Thomas when last reported on was at work on the construction of a cement plant at York, Penna. This work he concluded some time ago, but Professor Locke has not since then reported. He has, however, supplied an undated memorandum about Jack Giles, now geologist with the McMan Oil Co. at San Angelo,

Texas. . . . And here is some news that actually appeared in the current year of grace. Francis W. Walton has risen to the eminence of Vice-President in charge of store sales for Arnold Constable & Co. in New York. He becomes thus one of the youngest department store vice-presidents in the country.

And that is all to be found in the folder. All, that is, with the exception of a memorandum from O. B. Denison attaching the list of winners of various events at the 1922 Five Year Reunion held in June, 1927. This does not seem to have come to publicity before, and it is probably unwise to publish it now. It would also be difficult, since the handwriting of the official keeper of these records (who was not your Secretary) was marred by some peculiar and recurrent spasm which makes it indecipherable except to a trained antiquarian — which your Secretary is not, despite a persistent, and we acknowledge, plausible rumor to the contrary.

So that, then, must be all. It is highly unsatisfactory and we beg leave to submit our sincere apologies to all members of the Class for the length of time since the last report and the obvious failings of this one.

The only thing that the Secretary can think of to do by way of expiation is to perish by his own sword. Please consider this official notice of retirement as the honorable amend. He will do his best to supply one more fragment for the July issue of *The Review* and thus round out, if you can call it that, seven years of service — if you can call it that, either. The secretariat has been a pleasure and a privilege to him, if to no one else. He deeply appreciates it and hopes that during the second septenary the Class will for the first time have the sort of Secretary it deserves. — ERIC F. HODGINS, *General Secretary*, 8 Arlington Street, Boston, Mass.

**23** A very interesting letter from C. C. Mota was received by the Gensec the other day. Mota is Assistant Professor in Civil Engineering in the University of Porto Rico and had the pleasure of assisting in entertaining Professor Spofford on his Porto Rican trip. Here is Mota's letter: "The Technology Alumni had the pleasure of meeting Professor Charles M. Spofford here in Porto Rico. He arrived on February 18. A delegation of Technology Alumni, consisting of Manuel Font '13, José V. Dávila '21, Dr. Frederick H. Newell '85, César Canals '26, and myself, went to meet him at the pier. He was also met by Rafael A. González, chief engineer of the Isabela Irrigation Service, and Antonio Lucchetti, chief engineer of the Guayama Irrigation Service. We had prepared a very busy program to entertain him during his stay in Porto Rico. During the morning of his arrival we went to see the President of the University of Porto Rico, and soon after we went to visit the old Spanish fortification at San Juan, named Morro Castle. After visiting this historic place,

we went with Mr. Dávila to see the new filtration plant of the capital of Porto Rico. A bridge party was given in the afternoon in Professor Spofford's honor.

"In the evening the Technology Alumni gave a banquet to Professor Spofford at the Condado-Vanderbilt Hotel. This banquet was attended by the Honorable Commissioner of the Interior, Mr. Guillermo Esteves, Miguel Muñoz, President of the Public Service Commission, Thomas E. Benner, President of the University of Porto Rico, and Rafael A. González. The Technology men who were present were: Frederick H. Newell, Mr. Dávila, Mr. Font, Antonio Romero '12, Luis Ferré '24, Mr. Canals and myself. Mr. Dávila acted as toastmaster, and the speakers were Dr. Newell, Dr. Benner, and Professor Spofford. With this banquet we finished a very busy day for Professor Spofford, — the first day of his arrival.

"The next day we started for Mayaguez, where the Colleges of Agriculture and Engineering are situated, and where I am Assistant Professor in Civil Engineering. On the way we stopped at a bridge under construction at which Mr. Canals is the inspector. We also visited the works of the Isabela Irrigation Service where Mr. González is chief engineer. He gave the party a luncheon at his home, and soon after we continued on our way to Mayaguez where Professor Spofford was to give an illustrated lecture on 'Ancient and Modern Bridges.' The lecture was to be at four o'clock, and we arrived sharply at four with a flat tire — but we arrived safely and on time to begin the lecture.

"On the next day I had the pleasure of inviting Professor Spofford to give a lecture to my class in Theory of Structures. I am glad to inform you that the boys made a 'good showing' as Professor Spofford said. The faculty of the College of Engineering of the University gave a banquet by the seashore in his honor, after which he delivered his second lecture on 'Ancient and Modern Bridges.' That same day he went with Mr. Font to Guineo Dam which is under construction, and where Mr. Font is the resident engineer. The following Monday, Professor Spofford left for Santo Domingo, returning to San Juan on the twenty-seventh. He left for the States on February 28. It was a great pleasure indeed to have met and entertained Professor Spofford here in Porto Rico, and I am sure that he enjoyed his trip very much. In the summer of 1926, when I went to Technology to take a summer course, I had invited him to come to Porto Rico, but his trip was not materialized until now. His visit was a great source of inspiration and stimulation for the civil engineering students at the college.

"I have invited Dr. J. A. L. Waddell, a consulting engineer from New York, to come to Porto Rico some winter soon and I hope that this visit will be materialized for the benefit of my students." — ROBERT E. HENDRIE, *General Secretary*, 12 Newton Street, Cambridge, Mass. H. L. BOND, *Assistant Secretary*, 37 Concord Avenue, Cambridge, Mass.

## COURSE XIV

News has not been filtering through to your Secretary in sufficient quantities to have justified a previous contribution to *The Review* this year, and as a result some of the dope below may be old stuff to most of you, but it is the best we can do under the circumstances.

Frank Gentry has burst forth as a promising young author with the publication of his four hundred page book, "Technology of Low Temperature Carbonization." The book has been favorably received and all the reviews which we have come across have been highly complimentary. We offer Frank our heartiest congratulations and suggest to those of the Course who wish to express their feelings in a more substantial way that his publishers, Williams and Wilkins Company, of Baltimore, Md., will be glad to forward a copy of the opus by return mail to any one who writes and asks for it, providing a check for seven and a half smackers is enclosed.

We take this opportunity to remind you that the Class of '23 in New York and vicinity is now more or less organized for promoting dinners at frequent intervals. If you are interested write to us, or to Walter Marder at the American Type Founders Company, Jersey City, and notice of the next dinner will be mailed to you. At the last one E. P. Roll was the only other Course XIV representative. Ed spent three months in Salt Lake City this winter on a rate case. He is now with the Electric Bond and Share. Married life seems to agree with him for he has not lost any weight, to put it mildly.

Dave Skinner was married last August to Miss Dorothy Muriel Ware. It was a deep disappointment to us not to be able to attend the wedding, but we imagine that Dave was adequately nervous. We hope he had trouble in getting away because at a similar event in the life of your Secretary Dave was supposed to drive us away after the reception, but he carelessly allowed some low fellows to swipe essential parts of his distributor with the result that we and our blushing bride ran the rice and old shoe gauntlet only to find ourselves marooned on the bare sidewalk. We realize that it is late to offer congratulations and best wishes, but we do so anyway in behalf of the Course. — JOHN W. SANDS, *Secretary*, 158 Wardwell Avenue, Westerleigh, L. I., N. Y.

**'24** I can hardly add more about the Reunion than Bill Correale has set forth in his letter which follows. Perhaps I might remind you, however, that the date is May 31, the day after Decoration Day. Don't forget that part of the gang is going from New York to Boston by special transportation. If you are interested get in touch with Bill at 84 Pine Street. When you will have received this it will be only a short time to the Reunion. If you have not in the past months replied to our questionnaire please don't take us by surprise. Let us know if you are going to be there.

I have an announcement of the marriage of Carl Muckenhoupt on January 12 in Wamego, Kans., to Miss Sarah Joanna Boell, daughter of Reverend and Mrs. Benjamin F. Boell. Also from the Newark *Star Eagle* I learn of the marriage of Dave Evans, Jr., to Miss Myra Halligan of Montclair. And then there is the announcement of a spring wedding in Boston of David K. Grant and Miss Dorothy W. McConnell. Our congratulations to all. The *A. S. M. E. News* of January 7 carries an announcement of a meeting on January 14 in Newark of a joint meeting with the Women's Auxiliary, A. S. M. E., during which Helen M. Hardy, Director of Home Lighting of the Public Service Electric and Gas Company of Newark, spoke. Her subject was "Home Lighting, Utilitarian and Decorative."

Now comes Bill's letter: "Hal Donovan's announcement in these columns that I was busily engaged writing a reunion letter which would appear later in our Class Notes is partially responsible for this outbreak. More directly responsible, however, was a card I received today from the Technology Club of New York, announcing an ultra-special feature for the big alumni dinner they are planning. Dr. Stratton had consented to be their Honor Guest — and here we are, the Class of '24, to be the honored guests of Dr. Stratton in June. The comparison was too much for me. I felt so proud and cocky that I just had to write about it. I am afraid that if I attend that dinner I am going to snap my fingers right under Dick Ranger's nose."

"I asked Bill Robinson to write the letter last month which was to have come from me because I felt the Class ought also to be given a chance to hear from him on this reunion business. Now, however, I welcome the opportunity to say some of those things which could not be included in our reunion letters. In the beginning, I hesitated somewhat in accepting the responsibilities which I knew the job of Reunion Chairman would involve, not because I was unwilling, but because I felt that a man who was less an unknown quantity in the Class than I would attract a readier response from the men and assure a larger and more successful Reunion. I did finally accept, and you men showed me where I was wrong. I gave up worrying about the success of the Reunion long ago. Men accepted my appointments to our various committees with a readiness which was somewhat startling. The response which came in to my first letter was so generous and enthusiastic that I could hardly believe it was true. Rock Hereford held the long distance record for correspondence for some time, but was beaten the other day when I received a very enthusiastic letter from Siam, from Puny Gupta, Course I. Replies to our questionnaire came in from almost every part of the globe. As a matter of fact, this Reunion is not a three day affair for me, but has actually been an all year one."

"The men on the committees have worked long and hard. When I contem-

plate it, and consider that all their time and energy are being given to make it possible for a group of men who have seen little or nothing of each other for five years to just get together for a good time again, I think it positively remarkable, and try to account for it, but cannot. There is a bond there created by what some may call class spirit, but it must be more than that. It is one of those inexplicable somethings which I am convinced will be lifelong in endurance."

"I am really tickled to announce that plans for the Reunion, down to the minutest detail, are in excellent shape. Our luncheon will be honored with the presence of Lobby Lobdell, Uncle Horace, Doc Rowe, Professor Franklin, Eddie Miller, and Tubby Rogers. The extent to which we have been honored by Dr. Stratton's invitation to tea I have already brought before you. That we should have gotten the Corinthian Yacht Club for the seat of our more intimate activities I think has been a stroke of particularly good fortune. I cannot begin to describe the charm of the place. And if I were to describe now all the possibilities for a good time in store for you there, I would certainly be robbing the Reunion of its biggest kick. I want to get there and get going. Time drags frightfully."

"I will take this opportunity to acknowledge with thanks and much gratification, and to commend publicly, the assistance given me by the members of our Executive Committee and General Committee. These men have done all the hard work, and without them my career as Grand Mogul would have been what is commonly, though very expressively, termed a 'flop.' I'll see you there in June." — HAROLD G. DONOVAN, *General Secretary*, 139 Girard Avenue, Hartford, Conn.

## COURSE XIII

News has been more plentiful during the past month, and the direct cause I'll admit is a rather new but effective way apparently of receiving news. On February 21, 1929, my wife and I were blessed with the arrival of a baby girl, and the congratulations received also carried news from our several members.

French is again on the honor roll and writes that he is busy in Florida doing everything that he didn't learn in school except some designing and then on something that he never tried at the Institute. Quoting Frenchy, "The connections with business have made some interesting trips all around the Florida peninsula. I crossed the Everglades on the Tam-Miami Trail which was quite recently completed and looked over Florida University."

Gubby Holt informs us he has returned to Philadelphia, this time indefinitely. Gubby's newest address is 5301 Boynton Street, Germantown, Penna. — News from Ernie Stone was mostly personal, but we're glad to hear from him and fear he is fast going the way the most of us have recently gone. Good luck, Ernie! — Ash is the most enthusiastic man in the crowd. Trips to all the shipyards along



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the Atlantic are producing plenty of varied and interesting experiences. On the side all of Course XIII envy you, Ash.

A short chat with Professor Jack recently revealed that Fungus is back in California. He was a long time deciding but I guess California has looked good to H. G. for a long while. — Your Secretary was favored with being present at a combined meeting of the New York and Boston committees on Reunion at the Engineers Club the other afternoon, and he only wished that the same enthusiasm shown by the committees could be shown by the whole Class. It is expected of Course XIII. Anybody missing it who can possibly come will have only regrets on which to look back. So save the week-end of May 31 and June 1. — GEORGE C. JOYCE, Secretary, 16 Grove Street, Malden, Mass.

**25** Roger Ward has resigned his post as Course Secretary, on account of the fact that a large proportion of his time has to be spent on the airplane business. We are sorry to lose you, Roger, for we all enjoyed your deft touch on the typewriter. We hope you will continue to write to us once in a while, to let us know how your refrigerator is working, and what the weather is like in Buffalo.

Jocko Malone is the new Secretary for the mechanical engineers. He has followed Professor Haven's advice, and works for the Associated Factory Mutual Fire Insurance Companies at 184 High Street, Boston. When he is not traveling himself he hopes to get McNeil '26 to help him scout for news. McNeil has already started this work in the March Review, but made a slight error in saying that we (Cowan, Parkinson, Preston, and Wheeler) had a turkey for Christmas. The turkey was eaten on Thanksgiving. Christmas we all went home or elsewhere in search of Santa Claus.

Mr. and Mrs. Harold V. Robichau announce the birth of a daughter, Jean Margaret, on February 13, weight five pounds and twelve ounces net. As a minor detail, Robie tells us that he is working on a limestone quarry remodeling job. A crusher is to be installed down in the quarry with a forty-eight-inch belt conveyor, 560 inches long, rising at an angle of eighteen degrees, to carry the coarsely crushed rock to the present fine crusher. Besides being on a slope, the conveyor is at an angle with the column lines of the existing crusher building. We agree with Robie that this makes matters more interesting, for we have worked on similar problems.

Toni Lauria just crashed through with the following letter, which is enough to make any one start for Cuba: "I have been meaning to write for some time, but my new job down here has kept me humping for the past three months and I am just about beginning to see the day of light once again. I came down here on December 3 and have been working day and night, week-ends, and what else have you. So far I have only averaged about fifteen hours a day, but I am hoping that my engineering training will make it

possible for me to work about twenty-four hours a day, besides finding time for eating, sleeping, and those other necessary things of life.

"I am still chasing buses as I did in the States, but with what a difference. Where they have system in the States on bus lines, the companies down here have nothing. Until very recently one of the largest companies here did not know what each item cost, had no item of gas consumption on buses, did not know what their tires were costing them, in fact did not know the first thing about their business as far as costs were concerned. Reminds me of one small company in the States that used to put all incoming money in a checking account and all bills were drawn on that account. At the end of the month if there was any money left over they made a profit, if overdrawn they had lost money. The average bus company runs that way here only some of them do not even use a checking account. From that, figure out where they stand.

"Buses are far from orthodox designs. While in the States they have large buses made to haul a large volume, down here they get a small chassis and put a large body on it and expect it to do the duty of a chassis of double that capacity. The game here is in about the same stage that it was in the States way back in 1920.

"Besides that, I am running a repair school here for the education of our dealers on the proper way to repair tires. That was my first job down here. When I got here the machinery was piled up in a corner of the warehouse. Here is one case where Professor Haven's stuff came in good stead. Remember that Machine Shop layout we had where we figured out routing and proper progression of a unit through the shop? Right now we have all the equipment mounted and in full use and it has been since the first of the year. Several of our dealers are in for training. I never thought I would ever get to be a teacher but here I am (however that job is only a side line, as my main one is pushing bus tires). Without boasting, we have the most complete and up-to-date repair shop in the whole island, and are getting new equipment all the time. In a matter of six months or so we will have a young tire shop down here and will be able to do everything except build the original tire.

"I have been out on several trips so I have seen the island for a radius of about 125 miles about Havana. I am expecting to make a trip to the other end of the island shortly when we install a new shop in Santiago de Cuba. At that time I am also expecting to do a little visiting in that part of the island to get acquainted with conditions there.

"Now you, no doubt, are asking when am I having my fun. The answer is easy. I am not. When I first came down here I spent every night visiting cabarets and all other such places that I will not name. I had my fill of that soon. First thing, you cannot do that sort of thing and do justice to your work, and another thing is the fact that tourists are the only ones who patronize these places. Well, they

come down here with a pocket full of money to spend, so they do not mind high charges, but we poor suckers stuck down here on a salary are not that fortunate. For those two reasons I am not going there any more. (Remember Gage's song on our last Tech Night?)

"Talk about your scenery and wonderful weather, this is a young Paradise compared to the States right now. I left Akron the last part of November and it was cold, went up to Cleveland and almost froze there in a hail storm blowing in off the Lake. Then I went on to Philly for several days of cold, dreary, rainy weather, then onto the Havana Special and the change in weather was noticeable as we got further south. First I shed my overcoat, next my vest, and when I got on the boat at Key West for Havana I was ready to shed a lot of other things. Talk about warm, when I got here I almost roasted. I have got used to it now so that I do not notice it much. In fact the nights here get cold, compared to noons, and I am already beginning to feel it like the Cubans.

"On my trips out into the country (everything here outside of Havana, no matter whether it is a city or not, is so called) I found that the beauty of the scenery is striking and hits you between the eyes. Stately royal palms dot the whole country, mingled with banana trees and coconut palms. Everything here is green and flowers are in bloom, so compare that with the States and wish you were here. If it wasn't for the cost part of it life here would be sweet. I figured that it costs me \$80 a month more than it does in Lexington, Ky., and I am not having half the fun I had there.

"Lots of fellows who are now drinking poison for whiskey in the States ought to be here. Every corner has a 'bodega' where one can get anything under the sun in the line of drinks. Talk about prohibition! In the three and a half months I have been here I haven't seen more than one or two Cubans drunk, but Americans galore. They come down here and try to drink the place dry the first day. I have yet to be convinced that prohibition in the States is right, or any where near so, from the figures the Anti-Saloon League puts out about the wonders prohibition has done for the people in the States.

"Well, here I have rambled along and got no where, so it is about time to close. I am not married, have no family, and do not expect to for a little while yet. I understand Wade Johnson and Lloyd Irving are about to fall for the wives of the fair and weaker sex. Is that right? Take care of yourself, old top. Say have you heard from this bird Irving Symonds 'from out of the West' recently? He owes me several letters. Remember me to all the boys about the big city." — FRANK W. PRESTON, General Secretary, 102 East 22d Street, N. Y. C.

## COURSE V

You have all heard of this chap who has matriculated in some fifteen-odd courses in Columbia University and who

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can write the whole alphabet after his name. Well, sir, it looks as if Course V is about to boast of another such an energumen in the person of Pat Ramsey who has given this department no little concern with his flitting about from course to course. Let him tell his latest: "As for myself, I have vacillated again and have switched to that new Course they have just established at the Institute, namely, and to wit, Railroad Operation. It is a cooperative course with the Boston and Maine Railroad, similar to VI-A in functioning. I had a period with the road through the fall semester this year and had a circus the whole time. I spent two weeks in the car repair shops up at Billerica, Mass., as a mechanic's helper, doing about all the jobs that are done on passenger cars in the way of repairing them. Then I put in two weeks with the Signal Department, maintaining and repairing automatic block systems and interlocking work. Following that came four weeks with the locomotive shops at Billerica, again as a mechanic's helper. Then I acted as a draftsman in the mechanical engineer's office for three weeks. After that I put in an exciting three weeks on locomotive operation, riding all the different kinds of jobs that they have, local and passenger, through freight and passenger, gas cars, switchers, and what have you.

"If you want a real thrill, take a ride at night on the locomotive of a through passenger train that is about twenty minutes late and trying to make up time. Seventy-five miles an hour has an altogether different meaning after a session in the cab. Following a week with the mechanical superintendent, I put in three weeks in the East Somerville Engine House, making light repairs on locomotives.

"This semester I am back in school. Next summer I will be with the Maintenance of Way Department, later on in the Operating Department and then a semester of miscellaneous small departments, such as the accounting and purchasing. In between come semesters at school to provide an opportunity to rest up. I'll finish up this business in June, 1931.

"I also worked in a short trip to England and Scotland last summer, being gone from America just over five weeks, of which almost three were spent on boats. I had a peach of a time." As you can see Pat's letters are pretty interesting. They just reek with *élan de vivre*, and I'm all in after following him about. Incidentally, Pat claims to have mastered the secret of those unopenable windows on the Boston and Maine locals. Fill out the attached coupon and mail it to Pat at his home at 46 Massachusetts Avenue, Cambridge, and he'll spill the dark mysteries. — GERALD MILOT, Secretary, 25 Upham Avenue, Dorchester, Mass.

**'26** After years of silence, Course VI-A has burst into bloom. The bloom is in the form of a letter from G. J. Gross and it is pertinent to quote parts of it: "I came here to Hazleton, Penna., two years ago as an

inspector in the construction department of the Pennsylvania Power and Light Company and continued in the line of checking newly installed substation and plant electrical equipment until last August. At that time the department was merged with the Phoenix Utility Company, a subsidiary of the Electric Bond and Share Company, which incidentally manages the Pennsylvania Power and Light Company, and I transferred to the Transmission Department of the latter company. My work as assistant to the superintendent deals with transmission lines and associated subjects by coordinating correspondence of the nine division offices.

"Of doings of other Technology men in this vicinity I have little to report. C. M. Taylor '22 is also with the company here in town in the chemical laboratory, which, by the way, does the entire chemical analyzing for all the Electric Bond and Share Company properties. M. L. Grossman, VI-A, '27 is another fellow employee, but is in one of the generating plants at Pine Grove. I recently met H. A. Dambly '23 who is with the Philadelphia Electric Company in Philadelphia."

Additional information has been received from Mary Soroka. Hers is a story of achievement: "My experience, of the past few months especially, as a real dyed-in-the-wool construction engineer was, — well, I guess I had better begin at the beginning. I left my first job, a temporary one, as draftsman for the North Jersey Transit Commission, in January, 1927. The next fourteen months were spent as a structural steel draftsman for Purdy and Henderson Company, New York. There were three Technology men there at the time, — Muhlenberg and Field '25, Course IV; and Suydam '26, IV. For the most part I worked on the design of twenty- and thirty- story steel office buildings for various parts of the United States and Canada, and on the design of the dome of the new capitol in Havana, Cuba.

"One day as I finished sharpening a pencil I looked up to find W. W. Peterson, I, standing before me. He was sent up by the steel fabricators of the Bamberger Department Store job, and I was delighted to see him again. In April, 1928, I left steel designing for foundation work as an engineer for Spencer, White and Prentiss. You can picture for yourself Dr. Terzaghi's surprise when he walked into our office one day and found me using the theories he poured into us as seniors. With foundation contractors one never knows what is going to come up next. Almost at once I was sent outside, but that was nothing compared with what was to come later. You see, we were doing the underpinning for practically all the buildings, on Nassau and Broad Streets, which required additional support. It was my job to get field notes of the location of piers, footings, and so on, take them to the office to draw up, then to estimate the weights of the buildings and design the underpinning with grilages when necessary.

"In July I was sent outside, permanently, as the engineer on the job for the underpinning of the United States Sub Treasury, the Mutual Life and Syndicate Buildings — all on Nassau Street. This is where the fun began. So much seemed to happen; the construction game was so new to me. I can't begin to tell you all about it. For example, I leave it to your imagination to guess what the general contractor said — and did — when he found the 'lady engineer' on his payroll. Then there were funny experiences with Italian and Scandinavian laborers, not to mention experiences with superintendents. I met Pomykala, I, '23, here on the same job, but on the opposite side of the fence, with Moren, Maurice and Proctor. It was up to me to make an inspection, usually twice a day, of the work in the three buildings, keep a progress report, order materials, keep the diary, make field drawings, give first aid treatment, and assist the superintendent generally.

"But even the work of driving 205 cylinders comes to an end, and November found me back in the office working on foundation bids. Absorbing as my work was, I was still far from my chosen field which is hydraulics. I was offered a job as research assistant in the Hydraulic Laboratory of the University of Wisconsin this February, so here I am. So far I have been investigating some triangular weir coefficients, running tests, and doing a little pipe fitting, but that doesn't occupy a full day. In my spare time I have been assisting one of the professors here on his outside practice which at present is the design of a water supply and sewerage system for the town of Williams Bay, Wis."

Some kind soul, solicitous of the column, sent the Secretary a clipping from the Gloucester *Daily Times*, relating how Daniel Bloomberg had sailed on March 20 for England to represent the Telephone division of the Radio Corporation of America. — J. R. KILLIAN, JR., General Secretary, Room 11-203, M. I. T., Cambridge, Mass.

**'27** Lack of time makes our notes this month very brief and to the point. First, there is a formal note from Mr. and Mrs. Frank Robert Miller announcing the marriage of their daughter, Helen Lucile, to Robert Mansfield Bigelow, on Saturday, March 23, 1929, at Seattle, Wash. Mr. and Mrs. Bigelow will be at home after April 1 at 505 East Denny Way, Seattle. — The following from Kendall Bragg speaks for itself: "I had the honor of being enrolled in the distinguished Class of '27 in 1924, but have since fallen by the wayside and gone through Harvard Law. I was recently notified that I have been accepted as an Alumnus of Technology and thought in announcing that I had moved my office to 18 Tremont Street, Boston, I might include you among the recipients."

We conclude with a letter from E. H. Himrod, III, who writes from Rosario, San Juancito, Honduras, Central America: "Having most unexpectedly re-



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ceived two copies of The Review, both containing heartrending appeals for news, I am conscience stricken at my long silence. Hence my tale of woe. By the way, where did my address come from? I flattered myself that I'd rather thoroughly disappeared from human ken, and then suddenly I receive mail, all addressed in proper form.

"Anyway, here I am. Rather hurriedly deciding that another winter among New Mexico's snows at 9,000 feet was too much to ask of any man, I departed southward, the 'souther' the better. Just did beat the first storm last October. Through various and devious channels I found my way to this rag-time country. I'm an underground boss in a silver mine here, with a crew of a hundred or so semi-civilized Indian miners. Quite different from the States. Back there, if they don't like the boss, they quit the job. Down here they kill the boss, a much simpler solution. Nothing if not direct. The machete, a three-foot knife, is their favorite weapon. The white men take an unfair advantage, though. We all pack large and fearsome looking guns in approved cow country style, which even in inexperienced hands can outdistance a machete; at least, the natives think so, leading to the same result. To their simple minds, a gun in the hands of any American is a weapon of deadly execution. However, the situation is rather quiet now. It's now been nearly two weeks since a revolutionary army has been in the neighborhood. The last one camped on the pass over the mountains a couple of days and then attacked a neighboring town. The army was beaten off by irate townspeople, and returned to its lair to await more revolutions. All very absurd and melodramatic. I pulled my gun once, on seven soldiers. It wasn't loaded at the time, but they couldn't know that, could they? Another time, underground, an unpleasant sort of fellow dragged out a ten-inch knife on the mine foreman. There were four of us, and twenty of them, but the boss bluffed it through without casualties. Damned clever, these engineers. These people don't care much for the gringos. As one irritated spokesman with about seventy of his followers behind him told five of us at the portal of the tunnel one day, "We got along before the gringos came, and we'll get along a damned sight better when they're gone, and we'll see to it that they're gone soon," or at least the Spanish equivalent of that. All this is way back in the mountains, you understand, not down on the coast. We're practically inaccessible here eight months of the year during the rains. Great country. Oh, well, at that, it's better than Boston. You can't shoot Boston taxi-drivers. Then, too, there's no prohibition." — JOHN D. CRAWFORD, *Secretary*, 7 Goodwin Place, Boston, Mass.

## COURSE II

Your Secretary regrets very much to report this month that not one item of news about Course II men has come to light during the past month. To assure

you all that an effort is being made to reach the members of the Course, I wish to report that, in addition to the ten letters sent out last month, ten more are being sent out at the present time to the following men: Charles DeFazio, Ralph E. Derby, Robert G. Dexter, John P. Engel, Frederick S. Erdman, James H. Frink, B. Allison Gillies, Frederick E. Glantzberg, Malcolm Graham, Jr., and Tom C. Grier.

I met an ex-Course II man at the March meeting of the Detroit Technology Association in the person of Joe Yates. Joe appeared to be in fine health, enjoying life, and looking forward to some good golf weather soon. I hope to hear from more of you fellows before the next issue. — DAVID R. KNOX, *Secretary*, 13,505 LaSalle Boulevard, Detroit, Mich.

## COURSES I AND XI

The due date of this write-up comes at the time of my first visit to the Institute since graduation. News became so scarce that I actually had to visit some of the gang. That isn't the real reason I'm here. I'm really here to interest seniors in the Bell System, but as a side line I have found some news.

George Gerst has an interesting letter concerning himself and Bob Hatch. "In answer to your request for news, I can only shed light on the whereabouts of Bob Hatch and myself, since we have both been with the Texas Company since graduation. We both started as draftsmen in the New York office, but after a few weeks Hatch was sent to Virginia, and I went to Delaware. In a very short time I was sent to the Company's refinery at Port Arthur, Texas. On the way I met Hatch by chance on the train out of New Orleans bound for the same place where we roomed together for several months.

"Bob was in the drafting room there for several months, after which he was promoted to the estimating department where he still is. He has made good there and has since acquired the title of area engineer which is just one jump to assistant chief engineer. His interests outside of work (true to form) include a Buick roadster and a certain young lady. The above mentioned, together with eating and sleeping, account for his entire twenty-four hours per day. For further details Bob can be reached at 2111 Proctor Street, Port Arthur, Texas.

"L. P. Gaucher and J. S. Morse, both of '28, came to Port Arthur for the same company last June, but Morse returned to Boston in December. My own work has included plenty of variety. At one time or another I have been draftsman, field engineer, construction engineer, estimator, head of the field engineering department, student, and at present I am assistant construction engineer for the Rio Division, which includes all of Brazil. Consequently I am apt to be any place between Venezuela and Uruguay, but any correspondence will reach me at the following address: The Texas Company (South America), Ltd., Caixa Postal 520, Rio de Janeiro, Brazil."

Paul Ivancich is now working for Stone and Webster, and at the present time is located in Boston. John Harding '26, Parker and deLuccia are also with the same firm. — Soapy Woodbury and Marcucella are working on a new twenty-four story building for the United Shoe Machinery Company in Boston. Picture a twenty-four story building in Boston! Mark is job engineer. Soapy had as much mud and dust on his clothes as Mark, so he must be important too, although I didn't learn his official title.

Norm Parsons is visiting in Boston, a vacation from work on Long Island with the New York State Highway Department. Jake Jacobs is also in Boston on a vacation. He is with the same state highway department, but is located at Chatham, N. Y.

For the benefit of those who haven't visited the Institute since graduation, it is worth a trip back to see the Great Court as it is now dolled up. With grass, trees, well laid out walks, and landscaping, it is quite a contrast to the Sahara we knew. Send in plenty of news the next months. There is only one more issue this year, and I'd like to have enough news for you to think about until next fall. — LEROY G. MILLER, *Secretary*, 202½ Hubbell Avenue, Syracuse, N. Y.

**28** On April 5, Bus Ruch, the erstwhile General Manager of *The Tech*, was married to Miss Dorothy Ribblett at Akron, Ohio. Due to the paucity of accurate news from Bus, your Class Secretary regrets that he cannot give the Class all the desired information concerning this great occasion in Bus's life. However, it will all be in the July issue. Best wishes and congratulations are hereby extended to Bus by the Class.

Word has drifted in from Norm Estes, stating that from now on he is to be known as Don N. Cornell Estes, Esquire. Norm has just started working for the United Fruit Company, and will be located at Puerto Banios, Guatemala. He states: "On my trip down through the Caribbean I amused myself by strolling the decks and watching the man-eating sharks which were following the ship." — It is rumored that Wally Hodder, I, is getting rich, working as a big engineer for the New York City Terminal Construction Company.

The July issue will mark the close of our first year as Alumni. Let us all try to make this issue just full of '28 notes. Please write your Course Secretary, informing him of the great happenings in your career, and those pertaining to your friends. — GEORGE I. CHATFIELD, *General Secretary*, Room, 11-203, M. I. T., Cambridge, Mass.

## COURSE I

This is the first month of the year that we've had to write up these notes with only one letter from which to work. Come on, gang! You've been doing a good job in keeping us informed of your histories. Don't quit now. And, to those from whom we've had no direct word all

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year, how about a little action? Let's have a good bunch of notes for the next issue of *The Review*, — the last until next November.

Hank Lamb dropped in to see us some weeks ago. He is with the Blackstone Valley Gas and Electric Company, a subsidiary of Stone and Webster. Hank's work has been mostly on the design of substations around Providence, R. I. He seems, however, to have no great love for Providence and heads for Boston nearly every week-end. We can't say whether or not there's more in this than meets the eye. — Bill Kirk, as usual, is good for a bit of news. I saw Bill one day playing handball in Walker as a means of recuperating from a set of stiff mid-year exams up at Harvard Business School. He told us that Bob Harbeck had left his job in Maine and returned home to Milwaukee where he is employed by the Traction Company in subway construction.

Norm Parsons was around the Institute the other day. He and Klegerman are working for the New York Highway Commission at Long Island. Both had a vacation of two weeks in March and both spent the time in Boston. Norm's job is in the bridge department. Design there seems to be a matter of finding the span and then getting out a standard design for approximately that span and doctoring up the details. — Ed Ure informs us that Campobasso is with Metcalf and Eddy, and located somewhere in New Jersey. Ed is still located in Boston with the Bemis Industries, but just what he does to earn his salary is pretty much a mystery. — We hear that Beard has completed a report for the New York state legislature on the valuation of public schools, and is going to shift to a similar task in New Jersey. We also hear that Cristofalo has left the highway department out in Illinois and is back in New York. — The last we know of Weinberg is that he, too, is still in the big city with his combination engineering and real estate firm, but expects to be shifted soon.

The following excerpt is taken from a letter from Bob Kales, whose address is 1730 Burns Avenue, Detroit, Mich. Bob writes: "Just an amusing incident or two to relate. You know I graduated in January, or whenever they mail out the old sheepskins (apologies to the sheep). It did not come to me with as great a shock as it might as Charlie had forewarned me. After leaving school in October I loafed about Detroit until the middle of December, and believe me, the life of a man of leisure is not all a bed of roses. I finally could stand the strain no longer so went to work. I obtained a job with no trouble and spent a month and a half working with a transit and level, setting billets, plumbing columns, setting and checking anchor bolts, and freezing both my fingers and toes while running an

instrument during a period of zero weather. As soon as the weather warmed up they took me off the outside work and put me to work on detailing. My course in bridge design was of practically no value as all I did was miscellaneous iron, beams, more beams, and columns. Up until recently I have had no use for my theory of design, but today they put me to work on the design of a ten-story building which has to be completed in three days. That means Friday, Saturday, and Sunday. There is some chance that I shall come back for a Master's degree next year as I am finding out rapidly how little I really know, and should I return my year's experience will show me just what I need most."

Those of us at the Institute are still plugging along in the way of all Technology men. We are all beginning to think about starting to earn our own living for a change, although none of us have definitely landed a job as yet. — GEORGE P. PALO, *Secretary*, M. I. T. Dormitories, Cambridge, Mass.

#### COURSE XV

Announcement has been made that Mid Chism has become President and General Manager of the Electric Heating and Manufacturing Company of Seattle, Wash. Under Chism's direction the company plans to reorganize and put on the market a new line of electric water and space heating equipment. We extend our most sincere congratulations to Mid and wish him the greatest of success in his venture. — Emerson has left the employ of the Western Electric Company and is now located at Wilmington, Del., with the Lazote Company, a subsidiary of the E. I. du Pont de Nemours Corporation. He is at present aiding in the development of commercial processes for the production of synthetic ammonia and alcohol by high pressure methods.

Word has been received that Basilio attended the A. I. M. E. corrosion symposium held in New York on February 21. Combining business with pleasure, he visited the points of interest such as Chinatown, Broadway, and the Avenues. It has not been definitely determined whether or not he investigated the Palais Royal or the Moulin Rouge.

The Secretary is at a loss to know why so many fellows find it necessary to explain that they are not yet married: Emerson, "I'm not married yet;" Paige, "Still sober and single;" Collins, "Basilio is going to be a whatnot if he's not careful;" Kessler, "All reports to the effect that I am practically married are decidedly erroneous;" Kolligan, "Nurses and romantic fever;" Mitchell, "Two raises in pay, a flivver, a girl, what next? Whatnot?"

I note that there seems to be much speculation as to the operating ability of Harlan's chariot. — George Swift re-

ports that Lou O'Malley and Bob Canning are employed by the St. Joseph's Lead Company, located at Herculeaneum, Miss. — Jimmie Mitchell has entered the textile industry and is working at the Pacific Mills, Lawrence, Mass. — The whereabouts of Harold Bialkowsky still remains a mystery. — CHARLES E. BERRY, *Secretary*, 103 Nott Terrace, Schenectady, N. Y.

#### COURSE XV

Communications received this month were few in number but most excellent in quality. Two members of Course XV, from which we had received no news to date, have crashed through with glittering epistles.

The first letter was sent by none other than the one and only Hank Friedlander. Hank's letter came from Atlanta, Ga., where he has made his start in the advertising business. Hank spent most of the summer in New York with B. Altman and Company, but with the advent of cool weather, our friend decided to go south. Hank says he is sold on the small business idea and he has made his start in that direction by getting himself a partner and jumping into the advertising game. Hank informs us that he met George Flynn in Hazleton, Penna. It seems that George was in that particular city, inspecting mining equipment. In closing his letter, Hank made a statement, quite pertinent to a certain senior course in hydraulics. We may release this statement at some future date.

The second letter was from Bunny Burnell, and it was some letter. If we can judge from the tone, Homer is having quite a time out in the wild, windy city. Perhaps you recall that Bunny, Bud Gray, Joe Gaffney, and Cal Caldwell are working for Sears Roebuck Company. Joe is now in the hardware department, and Bunny, Bud, and Cal are in the general merchandise office. When Bunny wrote, Bud was in Wilkes Barre, opening a new store for the company. It seems that Bud has developed into quite a "trouble shooter."

Mac MacQuarrie was so shocked to have news of his moustache leak out through these columns that he has suddenly become beauty conscious and has had the thing trimmed for exhibition. Line forms on the right, — or Mac will gladly supply you with an autographed photograph of this new disguise if you will send one dollar and a stamped self-addressed envelope (adv.).

Norm Fournier is still with the New York Telephone Company, in New York City, and says that he is quite rich — as far as ideas and ambition are concerned. — On behalf of the fellows of Course XV, I want to take this opportunity to extend our sympathies to Frank McGuane whose father recently died. — PAUL E. RUCH, *Secretary*, 853 Harvard Street, Akron, Ohio.





## NEWS FROM THE CLUBS



### *Washington Society of the M. I. T.*

THE regular monthly speaker luncheon of the Society was held at the University Club at 15th and Eye Streets, N. W., on Friday, March 15. Commander H. N. Heck, Chief of the Division of Terrestrial Magnetism and Seismology of the U. S. Coast and Geodetic Survey, gave an interesting talk on earthquakes and earthquake recorders, with special mention of the new seismograph at Camp Technology, Maine, which was described in the March issue of *The Review*. About twenty-five members of the Association were present.

The speaker luncheons are held on the third Friday of each month at 12:30 P.M., at the University Club, and visiting Alumni are cordially invited to attend. — KENNETH P. ARMSTRONG '10, *Secretary*, 2002 Rhode Island Avenue, N. E., Washington, D. C.

### *The Technology Club of Central Ohio*

About all we can do is answer "Here" to the roll call, so scarce has news become. We are, however, planning a big dinner meeting in April for the purpose of discussing plans for the establishment of a freshman scholarship to be awarded next year to some Central Ohio student.

We are looking forward to the Technology Clubs Associated Convention to be held in Pittsburgh in May and hope to send a representative delegation. — EDWIN M. WOODWARD '17, *Secretary*, 1394 Mulford Road, Columbus, Ohio.

### *The Technology Club of Cincinnati*

The annual meeting of The Technology Club of Cincinnati was held at the University Club on Tuesday, March 5, with dinner at 6:30 P.M. It was made an evening for the ladies also, and there were fifty-four people assembled to enjoy the festivities.

Immediately upon arrival, guests were given place cards bearing the various names of old Boston landmarks, and were promptly led to the "Chapel" for the correct spiritual initiation. After the proper atmosphere had been created, places were sought at Charley Wirtz's, the Parker House, the Leonard Tea Room, and other notable haunts of that other day. The New England boiled dinner on the menu card was met with mingled feelings. Frederick W. Garber '03 suddenly discovered that the hour had got too late for him to remain as he had to address a local architectural society that same evening, but this proved not so pressing when the menu card proved to be a dummy. Rather an

excellent dinner was served to the groups around some seven tables, all decorated in red and gray, while a mounted beaver held sway in the center of the large table at the head of the room. Cartoons by Edward H. Kruckemeyer '11 depicting various members and some old professors were placed at several points of vantage.

After the viands had been disposed of, the Secretary attempted to make a report, but found it hard going in the face of sundry irrelevant and irreverent remarks. For some reason there was no sympathy present for business. The Treasurer's report, brevity itself, stating that over one hundred dollars were in the treasury, was met with jubilation. There was also a brief report of the Scholarship Committee by Stuart R. Miller '07. A few short entertaining speeches followed: one in Italian by Edward H. Kruckemeyer '11; one in Chinese by Fred W. Morrill '07; one in English by Howard B. Luther '08, and Henry M. Waite '90; then a faked radio program by Charles T. Kennedy '19 and John S. Raffety '22 that was very well received.

The Nominating Committee reported candidates for officers for the coming year as follows: President, Henry D. Loring '07; Vice-President, Francis G. Baldwin '06; Secretary, William V. Schmiedeke '12; Treasurer, Oliver L. Bardes '21; Directors, Clarence H. Spiehler '08, Richard F. Hayward '27, and J. Wallace Taylor '05. The Secretary was instructed by unanimous vote to cast the ballot electing the nominees mentioned above.

Songs and yells brought the dinner to a close, and the rest of the evening was devoted to bridge. — WILLIAM V. SCHMIEDEKE '12, *Secretary*, Penker Construction Company, 1030 Summer Street, Cincinnati, Ohio.

### *The Technology Club of New York*

The first anniversary of the Great Exodus from Gramercy finds The Technology Club of New York sitting pretty in the midtown district. What with bridge and cowboy pool tournaments, Thursday luncheons, and the annual dinner, the membership is showing signs of reconciliation toward the failure of Nellie, the feline with the maternal instinct, to cast her lot with the northward migration. Which is to say that we have burned our bridges behind us, and the Gramercy days are definitely of the past.

Since our last communication, Doc Duff's Games Committee swept up the litter from the last Battle of Little Big Slam and mustered the boys in for the Spring Bridge Tournament, as usual a series of five frenzied sallies against the strong lines of Fate. At the end of the fifth and last sally, lo, the name of Doc

Duff led all the rest! Separate investigations are being conducted by Grover Whalen, Mabel Willebrandt, and the Queens County Grand Jury.

We regret to announce that the Cowboy Pool Tournament has not been untangled. At the current writing the author of these lines has disposed of various and sundry opponents, but finds that Alf Dolben, his next obstacle in the process of elimination, has either moved to China or had his telephone taken out. The institution of default proceedings is being considered in order to get a whack at Frank Montgomery '02, who has cleaned up his half of the corral and is looking pretty cocky about it. More of which later.

While the Club has luncheon every day in its grill room, special stress has been laid on the Thursday gatherings. On each of these occasions there is a speaker who knows a great deal about something and in a definite length of time gets it off his chest for the entertainment and enlightenment of the luncheoners. The topics have covered a wide field, ranging from the construction of the Great Tinkers Dam in Hoboken to the care of patent leather shoes, and the grill is generally well packed. We would like to see you here every day, but you can't lose if you come on Thursdays at one.

The annual dinner of the Club took place at the Waldorf-Astoria, and was almost the swan song of that famous hostelry, for the house wreckers are rolling up their sleeves and it won't be long now until a giant new office building rears its form over this historic site. As on many similar occasions in the past the scene was laid in the Grand Ball Room, but the epoch-marking circumstance of the evening proved to be the absence of all speech making. President Stratton rose to his feet and expressed his satisfaction at this state of affairs, and the diners showed by their beaming smiles that the feeling was mutual.

This annual dinner always has a big kick of some scientific nature, and the kick was furnished this time by Mr. Sergius P. Grace, Vice-President of the Bell Telephone Laboratories. Mr. Grace had an assortment of paraphernalia that would have made Houdini or the Mayo brothers green with envy, and treated the gathering to a series of demonstrations based on the communication experiments of his organization. These ranged from amplifying heart beats and muscular friction into a thunderous uproar over a giant loudspeaker to translating a language sounding like corrupt Eskimo into intelligible English by means of a series of modulators, gadgets, and finally the loudspeaker. It was a great party, boys and girls, and if one of the last named devices can be placed in

the hands of every conductor and train caller in the country, we shall be satisfied. Hoping you are the same. — GEORGE S. HOLDERNESS '22, *Secretary*, The Fraternities Club, 22 East 38th Street, New York, N. Y.

### *Southwestern Association of M. I. T.*

The March luncheon of the Association was held at the University Club, Kansas City, Mo., on March 13. George W. Hall '23, chairman, and John J. Falkenberg '19 made a report covering the activities of the Scholarship Committee. Our program, furnished by the Secretary, consisted of several reels of movies showing the construction of deep sewers, and sewage treatment works. — C. ELLSWORTH BROWN '20, *Secretary*, 402 Interstate Building, Kansas City, Mo.

### *Detroit Technology Association*

The regular monthly meeting was held February 5 at the University Club. R. G. Cone, resident engineer for the new international bridge at Detroit, gave a very interesting talk on the design, construction, and progress of this new project. His talk was supplemented by moving pictures which proved very interesting to those present.

At the meeting on March 6, William Kuni, Detroit architect and amateur photographer, gave a splendid travel talk on Alaska, aided by numerous films which he shot while up in this interesting country last summer. The pictures themselves were noteworthy, and Mr. Kuni

admirably gave the members a very comprehensive idea of Alaskan scenery and the customs of the natives. — GEORGE F. GOKEY '21, *Secretary*, 8100 East Jefferson Avenue, Detroit, Mich.

### *Technology Club of Hawaii*

A dinner was held on Saturday night, February 16, at the Pacific Club, by the Technology Club of Hawaii in honor of two Past Presidents of the M. I. T. Alumni Association and other visiting graduates. James Rollins '78 and George Gilmore '90 were those honored as Past Presidents, and the guests were Dillon '93, and Payne '05.

Those present, besides the guests of honor, were: A. R. Keller '16, Horace Johnson '01, C. W. Dickey '94, Carl Andrews '28, Colonel Phisterer, S. T. Carr '06, Lyman H. Bigelow '01, Robert Thurston '11, H. P. Field '21, L. S. McLane '23, W. C. Furer '06, and Ralph Johnson '27. — HARRY P. FIELD '21, *Secretary*, P. O. Box 2750, Honolulu, T. H.

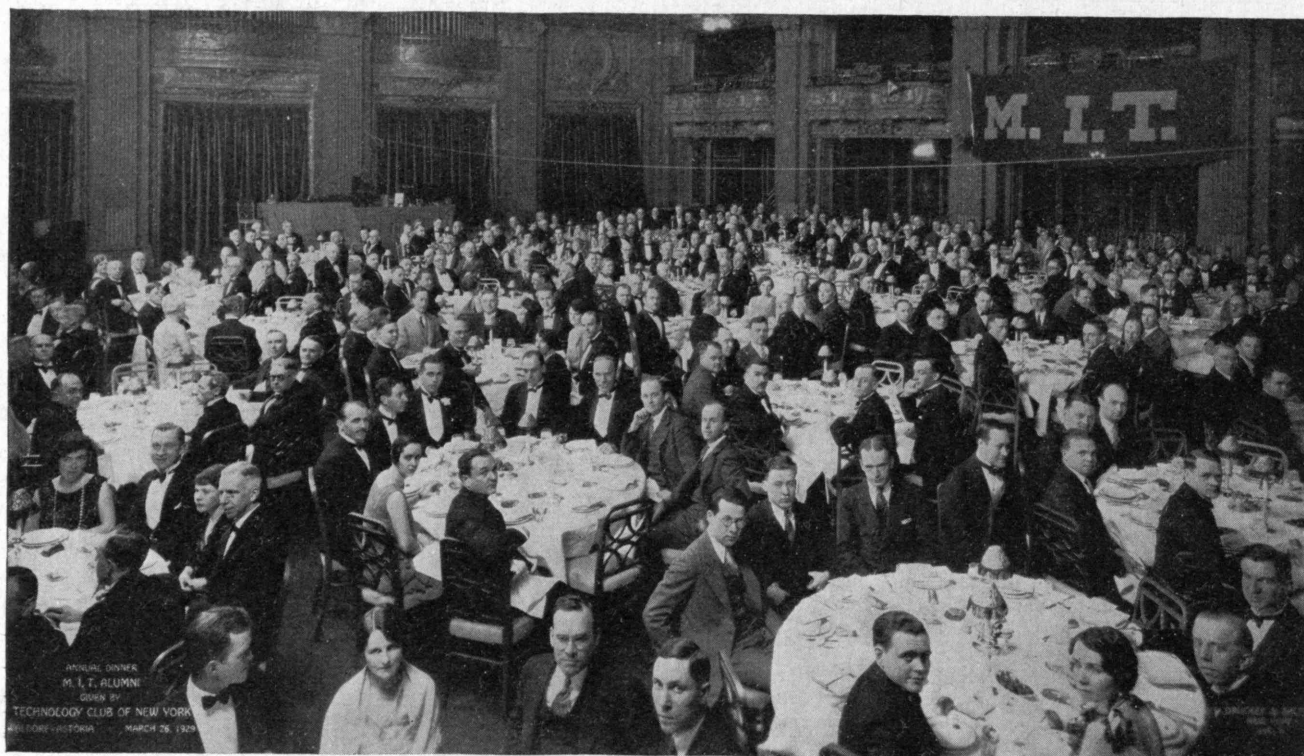
### *Technology Club of Albany*

The annual meeting of the Technology Club of Albany was held Monday evening, March 18, at the University Club. President B. R. Rickards '99 presided at the business meeting. Dinner was served to about thirty Alumni and friends. Besides the Alumni there were present several fathers and their sons, the later being prospective Technology students who were invited as guests of the Club to hear Professor Williams speak about the In-

stitute. Harold W. Bibber '20, President of the M. I. T. Club of Eastern New York in Schenectady, was present and gave a short talk regarding the scholarship fund, which the joint organizations are sponsoring. The annual report of the Secretary and Treasurer was read and accepted. Herbert W. Cummings '10, representing the Scholarship Fund Committee, reported \$88 pledged and paid.

The Nominating Committee, composed of Joe Harrington '11, Theodore Horton '94, and Charles Smart '05, presented a list of nominees to be voted on, and the Secretary was instructed to cast one ballot for the members. The following officers were unanimously elected for the ensuing year: President, Burt R. Rickards '99; Vice-President, Harlen N. Chapman '02; Secretary and Treasurer, Harold Hedberg '20. Joe Harrington was elected as the member-at-large to form the Executive Committee with the above mentioned officers. The retiring Secretary and Treasurer, E. R. Haigh '22, who is leaving Albany, was given a vote of thanks for his work during the past year.

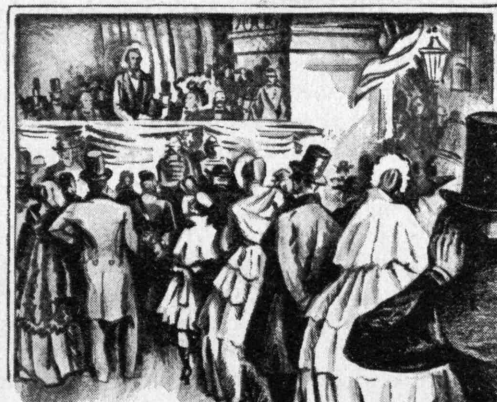
The speaker of the evening was Professor Robert S. Williams of the Institute who spoke at length on the recent improvements and additions at the Institute, and also gave a most comprehensive story of the present day student life. He presented some mighty interesting statistics, comparing the Institute's income and expenses between 1913 and 1928, and also its expansion in many fields. The talk was much appreciated. — E. R. HAIGH '22, *Secretary*, University Club, Albany, N. Y.



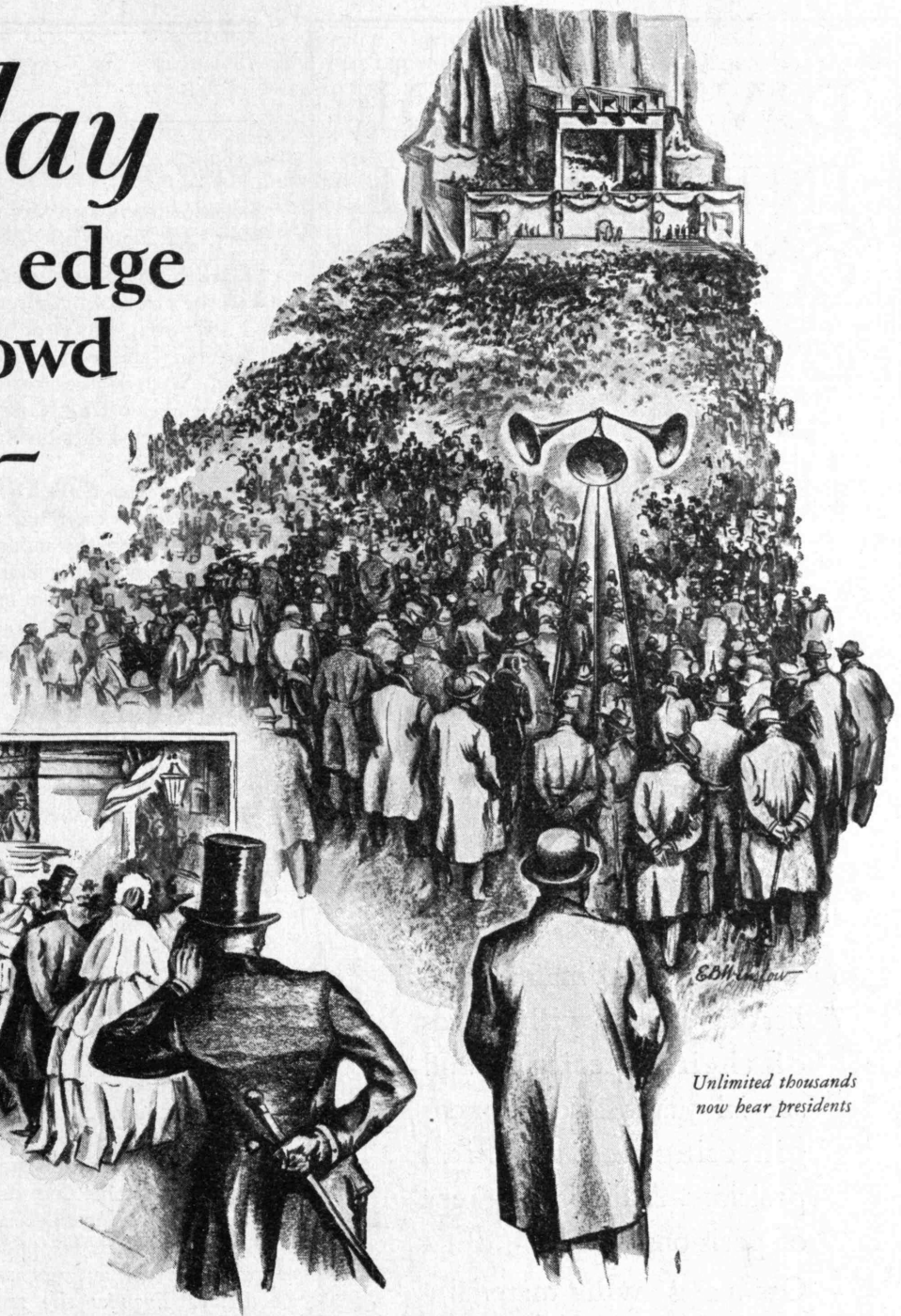
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## BOOKS

### *Nature vs. Nurture*

ANTHROPOLOGY AND MODERN LIFE, by Franz Boas. \$3.00. 246 pages. New York: W. W. Norton and Company, Inc.

**W**HEN Dr. Boas writes upon a subject connected with the physical or cultural history of man he is worthy of attention. Professor of Anthropology in Columbia University and lecturer at the New School for Social Research, with degrees from several foreign universities, he is a member of the National Research Council and was recently elected President of the International Congress of Americanists.

In the present book, Dr. Boas calls upon his long series of observations to present in popular form the problem of race applied to the modern man. He discusses the old question, what does man owe to nature and what to nurture? To what extent may the human race be improved through heredity and to what extent through the improvement of its environment? In technical words what contribution may we expect through eugenics and what through eugenics? The conclusions of the author are decidedly in favor of the preponderance of environmental influence, although recognizing the importance of heredity to a limited degree.

In Europe the cultural differences between the North Europeans and the people of the Mediterranean, between the East and the West Europeans, are striking and are correlated with differences in physical appearance. Based on these differences, fears are being expressed in America of deterioration of national character on account of the influx of East European and Mediterranean peoples. The question naturally arises, are these differences due to physical, *i.e.* hereditary characteristics, or are they due to environment? In other words, if these peoples lived in North Europe would they, notwithstanding their hereditary characteristics, within a few generations acquire the culture of North Europe? In the chapter on *The Problem of Race* the author discusses this question of race and concludes that "it does not matter from which point of view we consider culture, its forms are not dependent upon race." This is opposed to the point of view expressed by such authors as Madison Grant.

Under *Eugenics* the author continues his emphasis upon the effect of environment. Very poor people, because of poorer food and hard work develop slowly and remain short of stature as compared with the children of the well-to-do who enjoy plenty of food, exercise, fresh air, and sunshine. Proportions of body are determined by occupations, and are apparently transmitted from father to son, provided both father and son follow the same occupations. Here form is dependent upon function.

The biologist, concerned more with the study of the individual and his bodily organs than with the characteristics of groups and races, is naturally dominated by the notion that function depends upon form. The anthropologist studying groups of individuals and racial stocks is impressed by the influence of environment upon the actions of the various individuals. (Continued on page 438)



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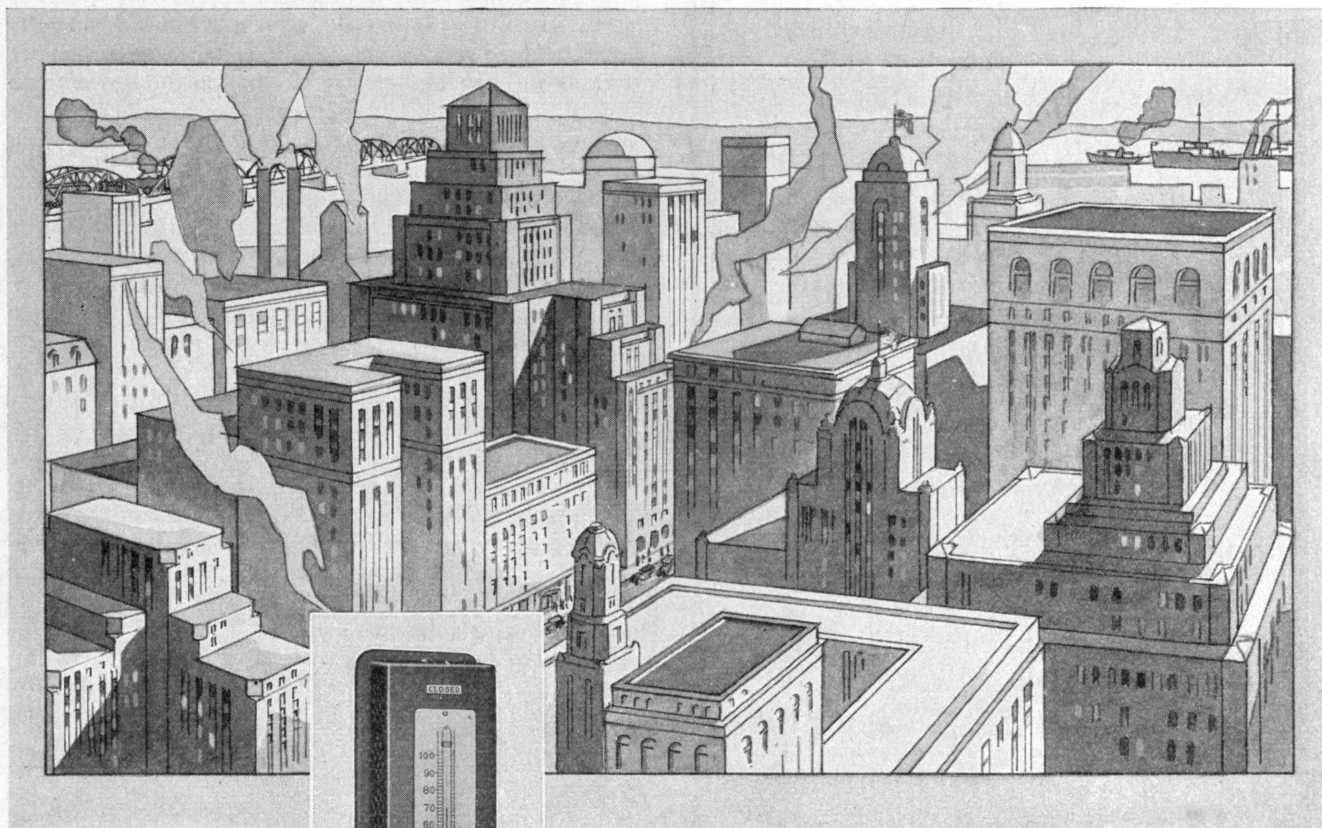
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Chicago New York Cleveland

## BOOKS

(Continued from page 436)

The biological eugenist is thus "inclined to assume that higher civilization is due to a higher type; that better social health depends upon a better hereditary stock; that national characteristics are determined by the bodily forms represented in the nation." The anthropological eugenist "is convinced that many different anatomical forms can be adapted to the same social functions; that different types of men may reach the same 'height in civilization.'"

In defective families where alcoholism and criminality abound, the author holds that if the individuals were submitted to favorable home and other environmental influences, such as surround the normal family, many of them would become perfectly normal individuals. "If they had resisted the temptations in this environment they would have been entitled to be classed as moral heroes." Dr. Boas concludes that eugenics must not be considered a panacea that will cure human ills; its proper field is "the attempt to suppress those defective classes whose deficiencies can be proved by rigid methods to be due to hereditary causes, and to prevent unions that will unavoidably lead to the birth of disease-stricken progeny."

In discussing "Stability of Culture," the author shows that cultural acts tend to become automatic and that the performance of an automatic action is accompanied by the lowest degree of consciousness. Thus the more automatic actions and beliefs there are in a nation the less is there individual independence and hence the greater the stability of the culture of the period. Only when these basic habits and principles are shaken by the impact of foreign ideas or by violent changes of culture is the opportunity given to the individual to establish new lines of thought that may give a new direction to cultural evolution. Disturbing conditions, such, for example, as today accompany the change from physical to machine labor are thus the stimuli for new adaptations and changes.

Discussion of culture naturally leads the author to a consideration of education. There are broadly two different ideals in educational training, the imperialistic and the democratic. The imperialistic state strives for power and mass action, and wants its citizens to be one in thought, one in being swayed by the same symbols, automatic in action and belief. The democratic state demands individual freedom from the fetters of social symbols. The proper balancing of these two ideals makes the work of the educator a difficult one.

From the first chapter on *What is Anthropology* to the final one on *Modern Civilization* the book is thought provoking and most helpful especially to one who would understand the environmental point of view.

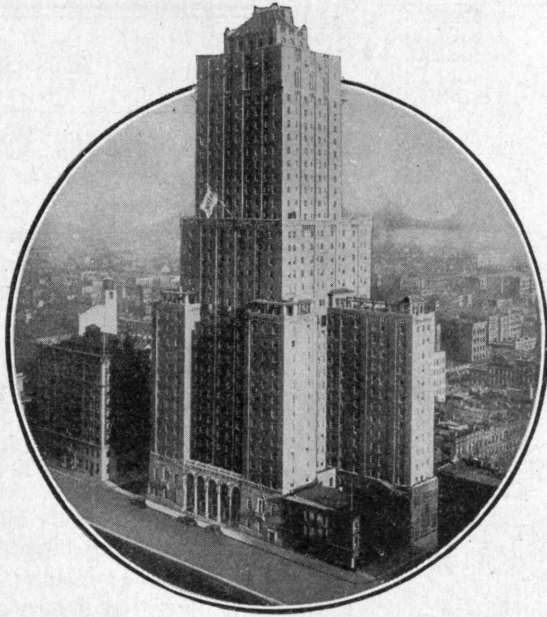
HERVEY W. SHIMER

### *Aeronautics in Plain Language*

THE AIRPLANE AND ITS ENGINE, by Charles H. Chatfield, '14, and Charles F. Taylor. \$2.50. 316 pages. New York: McGraw-Hill Book Company.

THE authors carefully explain in the preface that their book is neither purely popular for the masses nor highly technical for the élite. In (Concluded on page 440)





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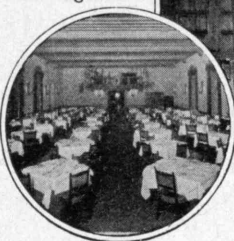
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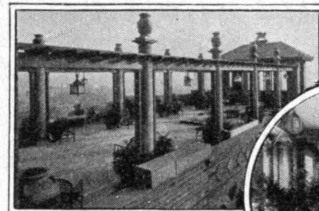


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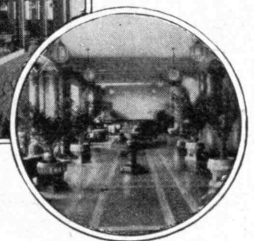


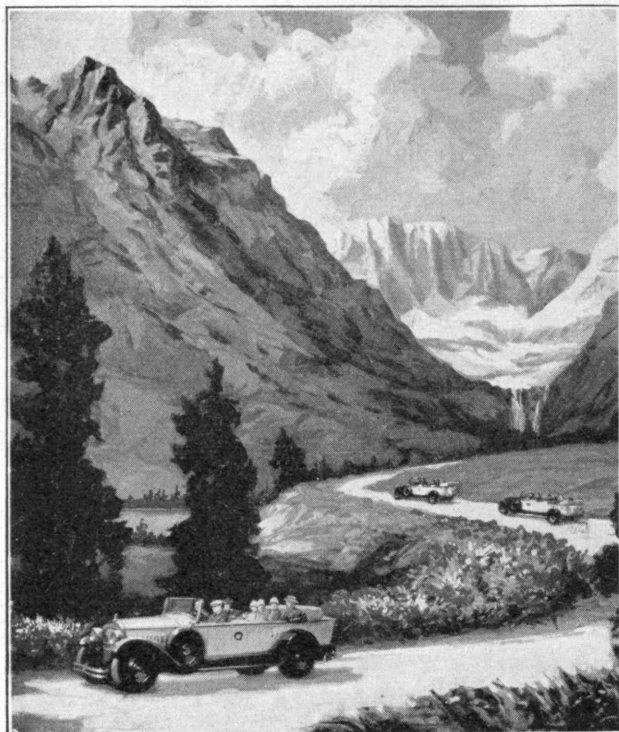
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## BOOKS

(Concluded from page 438)

this they err, for the book is written in an interesting manner that renders it understandable by the layman and at the same time outmaneuvers the temptation to slur over technical facts. The work is quite accurate and is as satisfactory for the student as for the casual reader.

Looking back through the years, I recall "Gaety" Lanza's "Applied Mechanics." There was a textbook! Reams and reams of pages covered with deep and intricate formulae. In "The Airplane and Its Engine" there are seven formulae. If the presence or absence of formulae is the criterion of the rating of a textbook, Chatfield and Taylor would not compare with Lanza, but it is a safe prediction that the former will be read and used by more people than the latter.

Especially commendable are the analogies used by the authors, the manner of explaining resultant force and center of pressure and the parables illustrating stability and control. It is refreshing to find so sane a discussion of the slotted wing. Too many designers are so steadfast in their orthodoxy that any deviation from an established practice is regarded as a freak and treated and discussed as an abnormality.

In the section on power plants it is something of a shock to find the old Liberty and OX-5 listed as obsolete and it is to be regretted that mention of the monocoque fuselage was omitted. Naturally a single treatise cannot hope to include every item, but the splendid performances of the Lockheed Vega indicate that monocoques have not perished from the earth.

The same criterion that listed Liberty engines as obsolete might well have deleted mention of venturi-tube air-speed indicators as the effect of the slightest ice formation on the lip renders them unfit for use.

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### Fire Prevention

INDUSTRIAL FIRE HAZARDS AND ENCYCLOPEDIA OF HAZARDOUS MATERIALS, by Gorham Dana, '91, and William D. Milne, '08. \$4.50. 948 pages. Framingham, Mass.: Lakeview Press.

UNTO a single volume of nearly a thousand pages printed on light, highgrade paper, the authors have condensed a detailed description of the processes and fire hazards of the principal American manufacturing industries. The book is in two sections:

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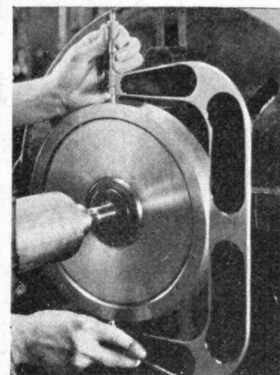
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## AIRSHIPS REDIVIVOUS

*(Continued from page 396)*

services where the volume of traffic and the length of route justify the investment. Before leaving the subject, I wish to note that for short distances and possibly for long distances, where intermediate landings are possible, the airplane has greater commercial advantages. The two types of aircraft appear to have been developed toward different objectives. The airplane, being a dynamic machine, must go at high speed and must consume fuel rapidly. It is, therefore, uneconomical for long distances as its pay load is all taken up by fuel. The airship, gaining lift by its constant buoyancy, uses power only for locomotion and is consequently able to make a long flight with little fuel. Its pay load does not diminish rapidly with distance. In the present state of the art, airplanes are efficient if they refuel every 400 miles. It is possible to operate over somewhat longer distances with reduced efficiency, but at 1,000 miles, the commercial return becomes doubtfully low. With improvements in engines and in aerodynamics, the experts of the Morrow Board estimated that a thirty per cent improvement might be possible in the future.

The airship's present development indicates a high commercial utilization of load capacity for distances between 2,000 and 4,000 miles. The larger airships are built the greater is their transportation efficiency, and improvements in engines and aerodynamics will improve airship performance quite as well as airplane performances.

Steamships have about reached an economic limit in size and speed. The Cunard, White Star, and French lines operate a weekly sailing on monster vessels using three ships. It is proposed to add to the United States Lines, two additional vessels costing \$30,000,000 each to run with the *Leviathan* to give a competing weekly service. There are now being built abroad five steamers of this class. When the new vessels are operating, there will be an increase of over 50 per cent in first-class passenger accommodations on the North Atlantic to handle a traffic that is increasing at a steady rate of only a few per cent a year. Commercial returns must be supplemented by heavy governmental assistance in the form of mail contracts to maintain such a five-day steamer. To speed up the steamship crossing to four days is impracticable.

Yet the mails and a few of the passengers are prepared to pay extra rates for extra speed. To build monster vessels costing much more than \$30,000,000 merely to speed up by twenty per cent the mails and the trip time for a few passengers can be avoided by the use of airships costing \$4,000,000. Such airships can make the crossing in two and one-half days and can carry all the first class mail and the passengers in a real hurry. Three airships will give a weekly service comparable in utility to that given by three steamships, since the great carrying capacity of the liners is only fractionally utilized.

We may, therefore, expect to see in the near future a trend in steamship design toward greater luxury and comfort without important increase in speed. The part of the traffic requiring speed will go by airship. Similarly, along the coast and across the continent, trains will not materially increase in speed. The airplane will carry traffic demanding speed of transport.



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Fairchild photograph on Page 410

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## TREND OF AFFAIRS

(Continued from page 408)

is confronting aviation, then, is that the public are expecting too much of it. It was for this reason that many of us were anxious to see merchandise in the form of mail and express carried safely and regularly across the continent before attempting any passenger transportation. With the experience thus gained, it would be possible to establish a satisfactory passenger service over the same line.

A good air line requires an organization as well as extensive ground facilities to insure regular and safe transportation of passengers. On a long flight one of the remaining difficulties of maintaining a schedule is the lack of weather information when once in the air. To overcome this, radiophones have been developed and will soon be in regular use. A plane thus equipped is able to keep in constant communication with the ground and with other planes in the air. By this means, it is possible to dispatch planes in a like manner to trains and to advise a pilot about the weather while he is en route. Instructions may also be given as to how a storm may be avoided or that a landing should be effected at a certain emergency field until a storm has passed by. In many cases a plane may climb over a storm which is of purely local character. In the past a number of accidents have occurred due to a fog setting in which prevented (Concluded on page 446)



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## TREND OF AFFAIRS



(Concluded from page 444)

the pilot from seeing the ground. In this case he usually flew in various directions attempting to find an opening in which to make a landing.

A directional aid to navigation is also being perfected, namely the radio beam. This, by means of a suitable instrument, directs the pilot along a definite course between terminal fields even though the ground is obscured. The matter of communication and direction is so important that the larger air lines employ a technical department to carry on this development. In the case of the Western Air Express this is in charge of President Hoover's son who is an experienced radio engineer, while Mr. Hiscock is in charge of a similar department for the Boeing Air Transport Company. The American Telephone and Telegraph Company have done a great deal of research work along this line as well as the General Electric Company Laboratories at Schenectady.

Improved navigation instruments are being developed. The induction compass, made famous by Colonel Lindbergh, is now available for commercial purposes and a device indicating continuously the contour of the ground will soon be on the market. Heretofore the pilot had to rely on a barometric altimeter which, of course, depends upon the weather.

Air mail is already an established fact. Letters are being delivered regularly with a very considerable saving in time. Passenger transportation is available over regularly established airways. This is both a safe and comfortable method of traveling to which is added the time saving feature. Cross-country trips away from the regular airways may be made, but not as safely nor as reliably. Simply use the same good judgment in your air travels that you would in choosing a steamship line for a trip abroad. The established company with a good reputation will see to it that you are flying with modern equipment kept in perfect shape and that no unnecessary chances are taken. Aviation is growing as fast as it can. Money, however, cannot take the place of experience and for this reason our air lines must expand slowly and soundly.

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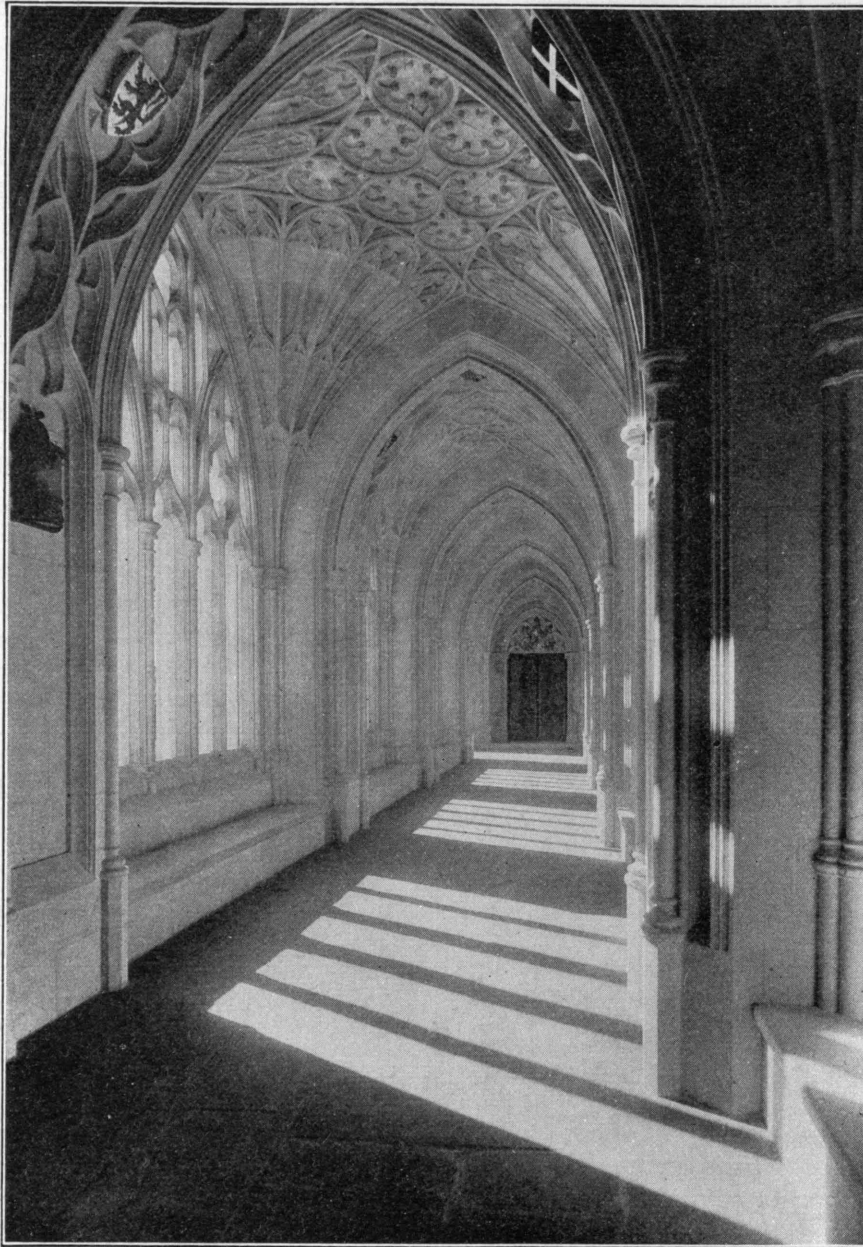
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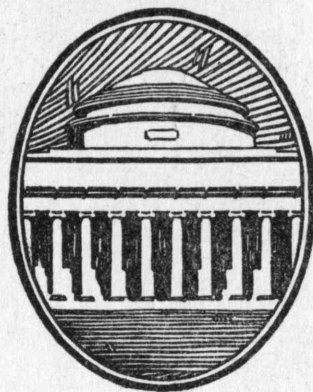
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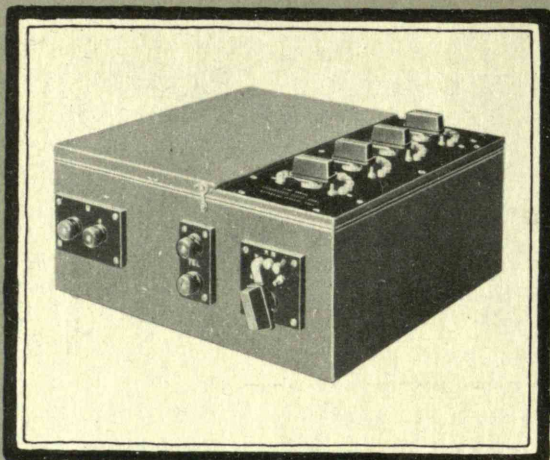
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